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# Recommend 40 Cent Minimum Wage Rate

## Industrial Committee No. 11, Under Fair Labor Standards Act Suggests This Hourly Minimum Wage For the Pulp and Paper Industry—Must Be Submitted To Wage and Hour Administrator.

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., March 27, 1940—Industry Committee No. 11, under the Fair Labor Standards Act, by a majority vote of the committee decided to recommend a minimum wage rate of 40 cents an hour for the Pulp and Primary Paper Industry. The recommendation will be submitted to Colonel Philip B. Fleming, Administrator of the Wage and Hour Division, Department of Labor. This is the highest minimum wage which can be ordered under the Act and is the objective set by Congress in the Act for all American industries engaged in interstate commerce or in the production of goods for interstate commerce.

### May Affect 8,500 Employees

Should this rate be approved by the administrator after a public hearing in which interested parties may appear in support or opposition to the proposal, it would increase the hourly wage rates of approximately 8,500 employees now receiving less than 40 cents an hour. The industry as a whole employs approximately 130,000 workers. The majority report will be submitted by Dr. John A. Lapp of Chicago, Ill., a public member of the committee who was designated by the administrator to serve as chairman. Attached to the majority report will be the report of the minority committee for the consideration of the administrator. The minority group suggested 35 cents an hour at the outset but the highest rate they would approve was 38 cents an hour.

The committee held its first session on Monday, March 18, when 18 members, six of whom represented the public, six the employees, and six the employers, began deliberations in the hearing room of the Wage and Hour Division at Tenth and D. Streets, Washington.

The Pulp and Primary Paper Industry is defined as "the manufacture of pulp, for any purpose, from fibrous material capable of yielding cellulose fiber and the manufacture of paper and of board from such pulp and from such fibrous material or either of them with or without addition of any non-cellulose fibre, colorant or filler."

### Committee Members

In addition to the chairman, the committee members are as follows:

For the Public: Wayne Lyman Morse, Dean of the Law School, University of Oregon, Eugene, Ore. Arthur D. Hill, Sr., Boston, Mass. Colonel William John Wilgus, Weathersfield, Vt. Honorable Henry A. Grady, New Bern, N. C. Mrs. Elizabeth Brandeis Raushenbush, Madison, Wis.

For the Employees: Herbert W. Sullivan, first vice-president, International Brotherhood of Pulp Sulphite and Paper Mill Workers, Worcester, Mass. Frank P. Barry, Albany, N. Y. Charles O. Dunton, Rumford, Me. Maxwell Loomis, Port Townsend, Wash. Paul Phillips, Mobile, Ala. Ray Thomason, Virginia Industrial Union Council, Richmond, Va.

For the Employers: A. R. Heron, Director of Industrial Relations, Crown Zellerbach Corporation, San Francisco, Cal. Dwight L. Stocker, President, Michigan Paper Company, Plainwell, Mich. Stuart E. Kay, Manager of Manufacturing, International Paper Company, New York, N. Y. W. J. Alford, Jr., president and treasurer, Continental Paper Company, Ridgefield Park, N. J. L. J. Parant, vice-president and general manager, St. Croix Paper Company, Woodland, Me. Alan G. Goldsmith, vice-president, the Mead Corporation, Chillicothe, Ohio.

## Buy Paper Under Walsh-Healey Act

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., March 27, 1940—During the week ended March 16, the Government purchased $209,674.20 worth of paper and allied products under the Walsh-Healey Act as follows: $31,183.60 worth of dummy cartridges for the Navy Department from Erd Company, Inc., Waynesboro, Pa.; $13,000.00 worth of mimeograph paper for the Procurement Division from Mathers-Lamm Paper Company, Washington, D. C.; $59,598.00 worth of toilet paper for the War Department from Ashland Paper Mills, Inc., Brooklyn, N. Y.; and $105,892.60 worth of fiber containers for War Ordnance from The Canister Company, Phillipsburg, N. J.

# Old Patten Mill Acquired By Cohen Brothers

## Deal Consummated For Transfer of Outagamie Mill of Former Patten Paper Co. To Cohen Brothers of Chicago Operators of Sangamon Paper Grading Co.—Work Starts On New Kimberly-Clark Unit—Other News.

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., March 25, 1940—In a deal consummated last week, the former Patten Paper Company mill at Kaukauna, Wis., familiarly known as the "Outagamie" mill, was sold to Joseph, Abe and Samuel J. Cohen of Chicago, operators of the Sangamon Paper Grading Company. The mill was owned by the City of Kaukauna, and the Cohen proposition was accepted by a vote of 9 to 1 when it was before the common council for action.

A group headed by Milford J. Taylor of Appleton, Wis., and Daniel McCarty of Kaukauna, also submitted a proposition but it was declined. This group had been negotiating for several months, and was represented at the council meeting by Carl Hofmeyer of Milwaukee, Wis., who said most of the necessary capital had been raised. Its offer was a lease of the mill at $1.00 per month, plus an agreement to employ a certain number of men.

### Purchasers Paid $4,000 Down

Under the terms of the Cohen contract, the buyers paid $4,000 outright, and agreed to operate the mill for paper manufacture for five years, and in case of sale, to dispose of the property only to parties that would be bound under the same contract. A surety bond of $5,000 is to be posted guaranteeing operation of the mill. None of the machinery can be dismantled unless it is replaced.

The city reserved the rights necessary for development and operation of its new municipal power plant, now under construction utilizing the Patten water power. The new owners are given 1,500,000 gallons of water per day from the forebay, and unlimited gallonage from the tailrace.

It is the company's intention to manufacture kraft wrapping paper from waste kraft collected from box factories, according to Samuel J. Cohen, secretary-treasurer of the company. Since the mill's two paper machines have not been used for several years, they will be reconditioned at once. Operations will not start for 60 or 90 days, since electric power will not be available from the municipal utility until that time, according to H. F. Weckwerth, utility superintendent.

### Work Starts on New Kimberly-Clark Unit

Excavation was started last week by the Siesel Construction Company, Milwaukee, Wis., on the new machine room building of Kimberly-Clark Corporation at Neenah, Wis. Two power shovels have been placed in operation.

Estimated cost of the building will be $150,000, according to the building permit. It will be four stories, 80 by 227.6 feet, and of reinforced concrete and steel. The location will be between the old Neenah mill and the Badger-Globe mills.

Machinery is to be installed upon completion for the manufacture of coarse crepe wadding for insulation purposes.

Application has been made by the company to the War Department for permission to construct a retaining wall and fill along the Fox River canal.

### Menasha Products in New Office

Menasha Products division of the Marathon Paper Mills Company moved into its new three-story office building at Menasha, Wis. last week. Although the interior is not entirely completed, various departments were transferred from temporary quarters maintained during construction in St. Mary's school building. Some work remains to be done in the lobby, and in the display and sample room in the basement. The entire project will be finished within two weeks.

The building has all the latest features of modern office buildings. It is heated by a combination of steam radiation and forced air, and will be air-cooled in summer. Windows are equipped with thermopane glass.

On the first floor are the lobby and reception room, general administrative offices, and quarters for the purchasing agent, traffic manager, engineer, production manager, personnel manager, and credit union. The entire second floor houses the sales and sales promotion departments. Third floor offices are for the art, stenographic, accounting, cost and credit departments. The art department has natural lighting from the north, and an automatic light meter that turns on the lights when dimness begins.

One floor of the company's new factory building is now occupied and in operation. Extensive purchases of new equipment were made and old equipment was rearranged to facilitate shipping and storage. There has been a complete streamlining of carton production. The second floor will house the new laboratory and research department, as well as the expanding parafilm and specialty bag departments.

Ten members of the company's correspondence staff made a tour of the Marathon's two conversion plants at Wausau, Wis., and its paper mill at Rothschild, Wis. During April approximately 50 of the company's salesmen also will tour the plants in groups of fifteen.

### Commission May Veto Freight Rate Increase

Paper manufacturers are hopeful a recommendation of Examiner H. W. Archer of the Interstate Commerce Commission will mean a significant victory to them. He contends no change should be made on paper freight rates from Wisconsin and the northwest to southwestern points. If the entire commission concurs, the proposed rates will be vetoed.

Mr. Archer's recommendation is construed as an admission of the paper manufacturers' contention that in the present keen competition for markets, the Wisconsin paper industry cannot absorb another increase in overhead costs. The increases would have been particularly severe for the group C papers, including towels, toilet and tissues, manufactured in

large volume principally at Green Bay, Wis. Printing, wrapping and other grades were also due for an increase in a highly competitive market.

Support was given the manufacturers by the Wisconsin Public Service Commission, which pointed out that fifteen years ago Wisconsin was one of five principal paper producing states in America. Since that time substantial economic changes have brought a development of the industry in other sections of the country, particularly in the South, where natural economic advantages make for stiff competition. Wisconsin mills must go farther afield for their raw materials, now finding it cheaper to import from Scandinavia than producing pulp in Wisconsin, and pay higher labor wages.

### Charges Against Badger Employees Dismissed

Charges brought against seven of eight employees by the Badger Paper Mills, Inc., Peshtigo, Wis., for violation of the Wisconsin employment peace act have been dismissed by L. E. Gooding, commissioner of the Wisconsin Employment Relations Board, on motion of J. Emmett McCarthy, attorney for the company.

### Commission To Control 92,200 County Acres

The Wisconsin Conservation Commission has assumed control of 92,200 acres of county-owned land under the state forest crop law, and will develop them for forestry as a state project. Hereafter all lands unproductive for forestry purposes will be eliminated from state holdings. The law permits counties and individuals to deed lands to the state for forestry purposes, the state agreeing to pay ten cents per acre annually.

## Government Paper Bids and Awards

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., March 27, 1940—R. P. Andrews Paper Company has been awarded the contract for furnishing the Government Printing Office with 80,000 pounds of supercalendered book paper in 38 inch rolls at 4.49 cents, bids for which were received on March 1.

Mudge Paper Company will furnish 2,000 sheets of 24 x 36 Quaker drab cloth lined cover paper at $147.97 per M sheets, bids for which were received on February 28.

Mudge Company will also furnish 10,000 sheets of 22 x 28 gray photo mount board at $35.34 per M sheets, bids for which were received on February 21.

The Printing Office has received the following bids for 10,000 pounds of oiled manila tympan paper; Old Dominion Paper Company, 9.49 cents; Enterprise Paper Company, 8.06 cents less 2 per cent; Link Paper Company, 7.4 cents; Cromwell Paper Company, 8 cents; R. P. Andrews Paper Company, 7.45 cents; and Mathers-Lamm Paper Company, 7.75 cents.

## Pacific Mills Erect Office Building

Erection of a new $20,000 head office building is now in progress at Vancouver, B. C. for Pacific Mills Ltd. The new block will adjoin the paper converting plant of the company on the Vancouver, B. C. waterfront and will be ready for use late in May. The new structure will be one story in height with part basement and of brick veneer construction. It will measure 48 by 80 feet.

## Powell River Expands Pulp Plant

[FROM OUR REGULAR CORRESPONDENT]

VANCOUVER, B. C., March 26, 1940—The Powell River Company is now erecting an addition to its pulp plant at Powell River, B. C. The building at present utilized was erected in 1938 as an extension to the company's No. 4 paper warehouse and measures 235 feet in length by 50 feet in width. The Kamyr unit was installed at that time with a capacity of 100 tons of sheet sulphite per day at about 55 per cent air dry. The balance of the space available in the building is used for sheet sulphite pulp storage, where the bales are handled by an electric lift truck with skips.

The original building was planned for an ultimate extension to the warehouse portion which would permit the addition of a drier to carry the sheet from the Kamyr and deliver it at about 90 per cent air dry. This later project has now materialized, and a modern Flakt drier and cutter is being manufactured, and will be shortly installed. A 600-ton automatic hydraulic press of the latest type for pressing the bales to minimum measurements has already been delivered. The building extension is now in the course of construction.

The extension will complete the wing formed by the previous extension, measuring 230 feet by 73 feet. There will be two tracks along one side which can be used for either loaded car storage or for train loading. The balance of the floor will be used for bale storage, thus compensating for the space taken up by the dryer, cutter and press installations in the other building. The building extension will be a duplicate as to general design of the existing extension, having concrete columns and eaves with hollow concrete tile non-bearing walls. Roof and trusses will be of wood and a concrete floor will be laid over the storage area. There will be 17 feet 6 inches of head room from the floor to the underside of the trusses, the bales being stacked to this height when in storage. This building will form a handsome addition to the mill group and is designed to tone in with the general architectural effects of the other buildings.

The new building will accommodate approximately 1500 tons of bales stacked on skips in batches of 24 ready for transferring by means of the electric lift truck to cars which will move it to ship side.

While the plant will have nominal capacity for 100 tons of unbleached sulphite pulp per day, it is expected to start operation under the new conditions with approximately 50 tons per day, working up gradually to the full 100 tons. The project is scheduled to be completed and in production early in July of this year.

## B. C. Pulp and Paper Prospects Bright

Prospects for the development of the pulp and paper industry in British Columbia continue to become more and more encouraging, according to authoritative observers of the international situation in this field. All B. C. plants, and indeed all those on the west coast, are busier now than ever before. Two of the plants in the state of Washington have just sharply advanced their prices.

One of the largest timber organizations in B.C. is now carefully considering plans for establishment of a pulp mill to operate as a supplementary unit to its various sawmills throughout the B.C. coastal region.

# Midwest Expects Business Pick-Up in April

## Some Merchants Report Trade Improvement Now But Most Paper Merchants Appear To Expect Better Business In April—New Ruling Interests Paper Merchants—Shipping Rate Proposals — Tested Papers' Plan.

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., March 25, 1940—Unseasonal weather and continued hesitance on the part of major buyers combined to make almost negligible the expected pickup in the Chicago paper market. Mill figures reported slightly favorable conditions and here and there paper executives were reporting a genuine improvement in demand. This, however, is not a general condition and the majority of those interviewed continue to expect a more marked improvement after the first of April. The general market structure was firm despite rumours here and there to the contrary. Buying was selective on a short term basis but there is plenty of justification for the belief that buyers are well aware of the raw material situation and the increasing manufacturing costs which have a direct bearing on future prices.

Waste papers continued weak locally with mixed papers particularly reported as affecting the general waste market. Newsprints and groundwoods were in fair demand with the latter specifically reporting a strong undertone. Krafts were slightly improved over last week though conditions were not quite acceptable to those who are seeking permanent profit basis for operations. Bonds and ledgers were little changed. Book papers were reported slow as were covers. The board market was about the same.

### Paper Merchants Interested in New Ruling

The Illinois Department of Finance recently issued Revised Rule 5, effective April 1, which will have a direct bearing on the paper industry in Illinois. The rule covers interstate shipments under the Retailers Occupation Tax and has an immediate influence on orders taken by manufacturers representatives in Illinois and shipped in to Illinois customers from outside the State mills. Heretofore, these shipments to Illinois customers have been considered as outside the jurisdiction of the Department of Finance. Under the revised rule, however, if the seller lives in Illinois or is represented in Illinois and the sale is transacted in Illinois the tax of 3 per cent is applicable on the "retailer" regardless of point of origin. A part of the rule reads as follows "tax liability under the Act is incurred when sales at retail are made in this State even though the property sold is transported directly to the buyer from a point outside this State, whenever the seller is engaged in the business of selling tangible personal property in this State and whenever possession of such property is transferred to the buyer in Illinois. It is immaterial whether the purchase or contract precedes or follows the interstate shipment or whether the shipment is made f.o.b. point of origin or f.o.b. destination. Contracts or agreements purporting to require shipments of the property sold outside of Illinois will not operate to exempt sellers where the tax would otherwise apply". Again "where tangible personal property is located within the State at the time of sale and pursuant to and a part of the sale does not leave the State, the sale is within the Act irrespective of where the parties to the contract to sell are located or the place where the contract was made or accepted or the purchase price paid". Readers interested in this subject should write for Revised Article 5, Department of Finance.

### Chicago To Be Western Division of Crossett Mills

The Chicago offices of the Crossett Paper Mills are now to become the western division headquarters of that company with the sales representation continuing under the direction of S. E. Brown. The company will have five divisional sales offices including the Chicago division, all designed to give a more thorough and economical coverage of the Crossett market.

### Lincoln Adds New Patten Lines

The Lincoln Paper Company, Chicago, has recently added two new Patten items which are proving very popular with the trade. They are Patten Ten Copy and Patten Service Mimeograph.

### Shipping Rate Proposals

Proposal for establishment of a westbound rate of 50 cents a 100 pounds on minimum carloads of 100,000 pounds of fibreboard boxes, corrugated or otherwise, has been docketed by the Intercoastal Steamship Freight Association according to word released in Chicago this week. Present rates are 75 cents, minimum 24,000 pounds, 60 cents, minimum 36,000 pounds and 55 cents, minimum 60,000 pounds.

### Strathmore Sales Plan Attracts Interest

Much interest is being developed locally in the new Strathmore sales program publicized in connection with the Staple Papers Group. Eight bright color mailing pieces are attractively arranged in a large box for direct distribution to Strathmore agents salesmen with individual mailings of the same pieces going later to a list of 20,000 printers, advertisers and users of paper. Strathmore is also adding two new lines to the Group in 1940.

### Tested Papers Publicizes Program

Tested Papers of America, Inc., located at 230 N. Michigan avenue, Chicago, is now using nationally known publications to advertise the full development of this program to coordinate the selling of household papers which so widely interested the paper industry a year or so ago. The current issue of the Saturday Evening Post features a two page spread, in color, listing the names of the paper houses in the various States cooperating with Tested Papers in the merchandising of household papers to the grocery trade. Seven such wholesale paper outlets are listed for the State of Illinois including firms in Joliet, Springfield, Rockford, Rock Island and East St. Louis. The basic feature of the plan is to group all types of papers designed for household use into an attractive counter and floor display, coordinated as to design and merchandising and price appeal.

# Boston Paper Trade Association Holds Annual Meeting and Dinner

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., March 25, 1940—With approximately 150 present and with seven new members elected, the Fifty-Fourth annual meeting and dinner of the Boston Paper Trade Association, a highly enjoyable affair, was held Wednesday evening, March 20, at the Algonquin Club. President John L. Hobson was toast-master. A reception and reunion took place before the dinner and there was community singing throughout the dinner.

In the business session, the report of the treasurer, T. Charles Casey, showed the organization in a good financial condition. In March 1939, the membership was 409 and in March, 1940, it was 411.

Taps were sounded after the names of those who had died during the year were read. They were George Bardwell, C. A. Crocker, Henry Curtis, Herbert W. Robbins and E. H. Stone.

### New Members Elected

The following new members were elected: John A. Andrew, Jr., John A. Andrew Company; Sumner B. Andrew, Monadnock Paper Mills; George P. Lee, The Parker-Young Company; Grant Richardson, Hammermill Paper Company; Frank H. Winter, Carter Rice & Co., Corp.; Henry M. Donahue, McLaurin-Jones Company, and William H. Walpole, Rutter & McNaught, Inc.

Robert M. Stone was unanimously elected president, as were all the other officers, as follows: First vice president, Irving N. Esleeck; second vice president, John H. Brewer; treasurer, T. Charles Casey, and acting secretary, John H. Brewer. Executive committee, Norman Harrower, Charles W. Fields, W. Edwin Porter. Membership committee, W. N. Stetson, Jr., Hubert W. Lockhart, Royden Loring, Matthew O. Byrne, Willard H. Loud. Arbitration committee, George W. Wheelwright, Arthur L. Hobson, Jesse G. Swift, Harry Thayer, Albert Carter. Auditor, William C. Ross.

President Hobson welcomed Joseph Timilty, Police Commissioner of the City of Boston as a guest of honor. Hon. Maurice Tobin, Mayor of Boston, was invited as a guest of honor, but was unable to attend.

### Director of Public Safety Speaks

The president then introduced Eliot Ness, director of public safety of the city of Cleveland, the speaker of the evening.

Mr. Ness gave a highly interesting talk, mentioning criminals, specifically Al Capone, and cited a number of examples of modern methods in police detective work, which would astound even Sherlock Holmes. In one case, robbers of jewelry safes in a building in Cleveland were apprehended about three years after the crime and after several clues were followed up by the use of the spectroscope which showed that gas made with fibers and concrete from the cuff of a man's trousers was the same as dust and fibers that came out of the safe. In another case, by ballistics, a murder, in which four men were implicated, was detected two years after the crime was committed.

The automobile, the speaker noted, has been a very potent reason for crime. In the old days people in a neighborhood were pretty well known to the police and the criminal "stood out," as well as the man out of work, and whoever went around with a roll of bills was more easily identified. Today a band of criminals can come to Boston in an automobile, commit a dastardly crime and get back to New York.

The possibilities for curtailing crime are not so good as they were 40 years ago, but on the side of the police are the automobile and the radio broadcast. In the line of approach, the people ought to give as much help to the police as the gangsters do to each other. "Your approach is that of influence which is much more than underground activities."

Mr. Ness mentioned interesting surveys, some made in Boston, which showed that 90 per cent of the criminals became so at ten years of age. It was found in New Jersey that boys who are truants today are murderers ten years hence. A reason is maladjustment, such as bad eyes. A boy is held up to ridicule in school. He doesn't like it, becomes a truant. Then society goes against him and when he is a truant, he is against society. He makes bad acquaintances and is an enemy of society.

There are 40 gangs of boys in New Jersey. Investigation shows that 88 per cent of the people who were released from jail were back in jail again within five years. We forget that the entire problem is that of adjusting environment and that new environment is desirable.

### Those Who Attended

The following is a list of those present:

D. P. Abercrombie, Jr., R. C. Adams, Harold Allen, John A. Andrew, John A. Andrew, Jr., S. B. Andrew, Henry C. Barr, S. W. Bartlett, Paul M. Beach, R. M. Beckwith, A. F. Bell, H. F. Bigelow, O. T. Bracken, J. H. Brewer, Charles J. Brown, J. F. Burke, F. T. Burkhardt, Arthur M. Burr, C. A. Burrell, E. C. Calkin, John H. Calligan, J. C. Campbell, H. R. Cantine, Hubert L. Carter, James Carter, 2nd, Ralph B. Case, T. Charles Casey, N. R. Cathrin, Howard E. Chase, David Cheever, Jr., L. Claflin, John C. Clark, N. S. Clark, R. C. Clark, Sheldon Collins, Clarence H. onrol, R. Cornell, J. R. Cryan, E. L. Cummings.

Newton T. Dana, T. K. Davis, Ralph Day, Adna C. Denison, C. H. Dodge, H. M. Donahue, J. J. Dwyer, R. W. Ely, Irving N. Esleeck, C. A. Esty, R. D. Ewing, G. W. Fallon, Arthur F. Fay, C. F. Fay, C. W. Fields, H. E. Fowler, P. B. Fraser, E. M. Graham, J. R. Halkyard, C. S. Hall, J. F. Halloran, Herbert Ham, Norman Harrower, C. W. Harvey, Edgar P. Hay, H. Heuer, Jr., Harold Hinckley, John L. Hobson, Walker Holmes, F. J. L. Hoss, Ralph N. Humes, J. E. A. Hussey, John P. Ingalls, P. M. Jones, John Kelley, E. E. Ketcham, Norman Kimball, C. J. Knutson.

F. B. Korbel, L. K. Larson, Ray Lee, H. A. Lind-

enberg, E. H. Little, Hubert Lockhart, F. G. Lockwood, Royden Loring, J. L. Madden, M. L. Madden, R. S. Madden, F. W. Main, F. H. Masselink, L. R. Mathers, Fred E. May, D. H. Maynard, W. J. McLellan, Herman Miller, Ralph Morrill, G. E. Morrison, Horace A. Moses, K. L. Moses, George Mosher, J. L. Munro, C. W. Nelson, Eliot Ness, W. W. Newton, J. J. O'Brien, Geo. Olmsted, Jr., Robert O'Neill, S. T. Orton, Kilby Osborn.

Maurice Park, N. J. Patterson, Leon M. Poore, W. E. Porter, W. M. Pratt, C. S. Proctor, C. E. Rice, Grant Richardson, John E. Roach, William Ross, William C. Ross, F. H. Savage, E. T. Simpson, Gilbert T. Singleton, W. S. Smock, Joseph Starr, John C. Stevens, R. M. Stone, George Stuhr, E. H. Sussenguth, J. H. Sweet, Jesse G. Swift, J. Gilbert Swift, Jr., R. P. Teele, Joseph Timilty, C. W. Townsend, F. Bendel Tracy, H. H. Tucker, W. Gardner Very, John W. Vivian, Van Rensselaer Walden, William Walpole, Robert H. Welch, C. Frederic Wellington, J. R. Whitney, Ray Wight, Frank H. Winter, C. W. Wood, E. L. Wood.

## Intensive Course in Lithography

It has been announced by the Lithographic Technical Foundation that the Intensive Course in the Fundamentals of Lithography, given annually in cooperation with the New York Trade School, 312 East 6th street, New York City, will begin on Monday, July 1. A number of applications have already been received so it now appears that the limit of twelve students will be reached long before the opening date.

The Intensive Course is designed to enable young technical men to obtain a basic knowledge of the lithographic process from both a scientific and a practical viewpoint. To qualify, candidates must have had sufficient training in chemistry to enable them to understand its application to lithography. Young chemists and chemical engineers are considered the most acceptable candidates for this specialized work.

Some of those who have already enrolled for the 1940 course hail from such distant points as Texas and Oregon, thus indicating that again as in previous years the group will represent widely separated parts of the country. Companies who contemplate enrolling men for this course should communicate with the Foundation at once because only twelve students will be accepted.

## M. E. McGarry To Leave Wausau

M. E. McGarry, for the past three years vice-president and sales manager of the Wausau Paper Mills Company, announces his resignation effective as of April 15.

During the period of Mr. McGarry's connection considerable progress was made in the up-grading of Wausau papers and in addition to a varied line of specialty papers a complete line of watermarked sulphite bonds, mimeograph and ledger papers was developed.

Mr. McGarry intends to take a short vacation after which his future plans will be announced.

It is also announced that L. J. Walters has resigned from the sales department of the Wausau Paper Mills Company, effective April 1, 1940. His plans for the future will be announced later.

## High Pressure Gurley Densometer

This porosity testing instrument is a new model of the well-known Gurley Densometer, arranged to give convenient readings on glassine, waxed paper, cigarette tissue, condenser tissue, and other porous but dense sheet materials.

It measures the porosity, or air-permeability of paper. Since this is closely associated with formation, the test helps control the selection of papers giving the proper degree of absorption of ink, wax, adhesives, and other liquids. It measures the formation of the paper. It enables regulation of the paper machine to give the desired formation or appearance, as well as strength requirements, because there is a close correlation between these properties and air-permeability.

Air, under uniform pressure, is forced through an area of one square inch of the sample, and the time noted for the passage of a given volume. The air pressure, equivalent to 12 inch water, is furnished by a graduated inner cylinder or piston, floating in mercury contained in the outer cylinder. The inner cylinder is standardized as to volume and weight, and is graduated to 5 cc. Readings are taken by a stop watch as the graduations pass the top edge of the outer cylinder.

The air is conducted through an open-ended tube extending through the mercury to the surface of the sample, through which it escapes. The sample is clamped between orifice plates having optically flat contact surfaces.

The minimum readings require only about one-twentieth the time required by the regular Gurley Densometer, and hence make this valuable test easily applicable to a wider range of paper.

## Pulpwood Cut Higher in Quebec

MONTREAL, Que., March 26, 1940—The effect of the demands of the European conflict is seen in the fact that the cut of pulpwood in the Province of Quebec for the past season has been considerably heavier than a year ago, trade estimates putting it at approximately 1,700,000 cords, or about 40 per cent in excess of that cut in the 1938-39 season. The total of men employed on the season's woods operations is put at 50,000, as compared with about 35,000 in the previous season. Reflecting substantially better demand particularly from the United States, prices have this year been about $1 per cord higher, the present ruling price of $8 per cord peeled delivered on cars comparing with $7 a year ago. Apart from the American demand for pulp wood, only other export demand in quantity is for pit props for the British Government, (reference to the orders was made recently by Premier Chamberlain) but it is said that the business will go mainly to Nova Scotia and New Brunswick. For the year to date the railway freight movement of forest products in the Eastern Division has run for pulpwood 40 per cent in excess of that for the similar period of last year, for pulp and paper 26 per cent more, for lumber 22 per cent more and for miscellaneous products 16 per cent more.

# FINANCIAL NEWS

### New York Stock Exchange

High, Low and Last for the Week Ending March 27, 1940

| | High | Low | Last |
|---|---|---|---|
| A.P.W. | 2½ | 2½ | 2½ |
| Armstrong Cork Co. | 41¾ | 39¼ | 41 |
| Celotex Corp. | 11⅜ | 10½ | 11⅛ |
| Celotex Corp., pf. | 66 | 65 | 65 |
| Certain-Teed Products Corp. | 7¼ | 6½ | 7 |
| Certain-Teed Products Corp., pf. | 33½ | 30¾ | 32¾ |
| Champion Paper & Fibre Co. | 21½ | 21½ | 21½ |
| Champion Paper & Fibre Co., pf. | 103 | 102¾ | 102¾ |
| Congoleum-Nairn Co. | 24⅛ | 23⅜ | 23¾ |
| Container Corp. of America | 15¾ | 15 | 15¾ |
| Continental-Diamond Fibre Co. | 7⅝ | 7 | 7⅝ |
| Crown-Zellerbach Co. | 15¾ | 15⅜ | 15½ |
| Crown-Zellerbach Co., pf. | 90½ | 89½ | 89½ |
| Flintkote Co. | 20⅝ | 19¼ | 20⅛ |
| Robert Gair | 3 | 2¾ | 3 |
| Robert Gair, pf. | 14 | 13⅝ | 14 |
| International Paper & Power | 12 | 11⅜ | 12 |
| International Paper & Power, pf. | 55½ | 53¼ | 55⅜ |
| Johns-Manville Corp. | 70½ | 69 | 69½ |
| Kimberly Clark Corp. | 37½ | 37½ | 37½ |
| MacAndrews & Forbes | 34 | 34 | 34 |
| Masonite Corp. | 37 | 35¼ | 37 |
| Mead Corp. | 9⅞ | 9¼ | 9⅞ |
| Mead Corp., pf. | 64½ | 64½ | 64½ |
| Paraffine Companies, Inc. | 43 | 42½ | 42½ |
| Rayonier, Inc. | 16¾ | 16¼ | 16¾ |
| Rayonier, Inc., pf. | 28 | 27⅞ | 28 |
| Ruberoid Co. | 19½ | 19 | 19¼ |
| Scott Paper Co. | 46⅜ | 46⅜ | 46⅜ |
| Scott Paper Co., pf. | 113 | 108½ | 113 |
| Sutherland Paper Co. | 32¾ | 30½ | 30⅜ |
| Union Bag & Paper Corp. | 13⅛ | 12⅝ | 13⅛ |
| United Paperboard Co. | 4¾ | 4½ | 4¾ |
| U. S. Gypsum Co. | 83½ | 81¼ | 83½ |
| U. S. Gypsum Co., pf. | 180½ | 180 | 180 |

### New York Curb Exchange

High, Low and Last for the Week Ending March 27, 1940

| | High | Low | Last |
|---|---|---|---|
| American Box Board Co. | 5½ | 5⅜ | 5⅜ |
| Brown Co., pf. | 27 | 25 | 27 |
| Great Northern Paper | 42½ | 42½ | 42½ |
| National Container Corp. | 9½ | 9¼ | 9½ |
| St. Regis Paper Co. | 2⅝ | 2½ | 2⅝ |
| St. Regis Paper Co., pf. | 60½ | 60 | 60½ |
| Taggart Corp. | 4¾ | 4¼ | 4¼ |

## Glatfelter Nets $195,558

P. H. Glatfelter, president of P. H. Glatfelter Company, Spring Grove, Pa., in his report to the stockholders accompanying the annual report, stated gross income before depreciation, amounted to $491,135.77 or 31 per cent over the previous year. Dollar sales increased 23 per cent. Net income after provision for interest, depreciation contingencies, federal and state income and franchise taxes amounted to $195,558.71, an increase of 76.88 per cent compared to $110,560.57 in 1938.

The sum of $130,636.86 were set aside for taxes in 1939, or 64 per cent more than the amount set aside in 1938. Federal income and capital stock taxes, plus state income, capital stock and property taxes, amounted to $107,160.33, with Social Security taxes amounting to $24,774.53. The heavy tax burden imposed on industry, both Federal and State, makes it difficult to maintain a regular dividend policy. It is a burden shared by every one—employees, management, stockholders, and consumers.

Dividend disbursements for the year on the first preferred 6½ per cent stock amounted to $10.50 per share.

The following officers and directors were elected: P. H. Glatfelter, president-treasurer; W. S. McClellan, vice-president; J. C. Overmiller, secretary; P. Koenig, assistant treasurer; C. A. Ostertag, assistant secretary. Directors: P. H. Glatfelter, W. S. McClellan, F. G. Dempwolf, Carl W. Fenninger, and J. C. Overmiller.

## New Kimberly-Clark Financing

Financing plans involving the redemption of more than $9,000,000 of existing bonds, provision of new funds of the approximate amount of $3,000,000 and authorization of a further $8,000,000 to be used if and when required, were disclosed by the management of Kimberly-Clark Corporation, Chicago, in a proxy notice to shareholders yesterday.

The stockholders were advised that at the annual meeting on April 11 they will be asked to authorize an issue of first mortgage bonds in an amount not exceeding $20,000,000. Of the total, $12,000,000 principal amount of such bonds to be designated as first mortgage serial bonds series of 1940, would be issued of which $10,000,000 would be pledged with First National Bank of Chicago, Chase National Bank, New York, and First National Bank of Milwaukee as collateral security for $10,000,000 of loans. The balance of $2,000,000 of the new bonds would be sold to Northwestern Mutual Life Insurance Co.

Proceeds of the financing in the amount of $9,057,600 would be employed to redeem on June 15, 1940, the 4¼ per cent fifteen-year sinking fund bond series of 1937, and the balance would be made available for general corporate purposes.

The new mortgage bonds would be dated July 1, 1940, to mature in equal semi-annual installments of $500,000 each from Jan. 1, 1941, to July, 1942. They would bear interest of 1½ per cent on the first maturity, 1¾ per cent on the second, 2½ per cent on the third and fourth, 2¾ per cent on the fifth, 3 per cent on the sixth to tenth, inclusive; 3¼ per cent on the eleventh to twentieth, inclusive, and 3½ per cent on the remainder.

## Hinde & Dauch Earns $862,384

The Hinde & Dauch Paper Company and subsidiaries for 1939 report a net profit of $862,384, equal after dividends on 35,900 shares of $5 cumulative convertible preferred stock of $1.90 each on 360,250 shares of $10 par common stock, against $645,778, or $1.29 a common share, in 1938. Dividends received in 1939 from Hinde & Dauch Paper Company of Canada, Limited, an unconsolidated subsidiary, amounted to $68,777, or $4,336 less than the company's proportionate interest in earnings. In 1938 dividends from this subsidiary totaled $144,742, which was $64,199 less than the proportionate interest in earnings. Gross sales in 1939 increased 15 per cent to $13,845,411.

## St. Lawrence Votes Dividend

Following the annual meeting of the St. Lawrence Corporation, Limited, in Montreal, the directors met and decided to place the Class "A" preferred shares of $50 par value on a regular dividend basis at the rate of 80 cents per share per annum, payable 20 cents per share quarterly. Initial quarterly payment for 1940 of 20 cents per share was declared for April 15 to shareholders of record March 30 next. It was also decided by the board that further to the regular

80 cents for the year the directors at the year-end would consider the declaration of an additional dividend should the revenues of the corporation justify.

By this action the directors accord to the shareholders a basis of regular payment that they can anticipate with the good possibility of a year-end extra that would pass on to them participation in whatever additional revenues should accrue in their favor. It will be recalled that for the year 1939 there was paid a dividend of $1 per share, as compared with 50 cents disbursed for 1938, and $1 for 1937. The corporation's principal source of revenue in recent years has been derived from its ownership of the majority of Brompton Pulp & Paper Company's capital stock on which it received a dividend for 1939 of $1.10 per share, 55 cents for 1938, and $1.10 for 1937.

## Withhold Action on Finnish Paper

Customs officials are withholding action on imports of Finnish printing paper which was above the normal weight of standard newsprint, had 6 per cent ash content, and a gloss above that required by newspapers. The value is believed to be unduly low, the laid down cost to the importer at New York being from $49 to $51 per ton, even with present high shipping rates. The paper was imported at New York, Los Angeles and San Francisco. The present Pacific coast laid down price was about $4 per ton above that at New York, because of the added shipping cost.

Customs officials at Galveston are withholding action on imports of several hundred tons of paper of rotogravure type because of their belief that the selling price is below the ruling price of such paper in Norway.

The United States Customs Court has decided that paper in rolls shipped from Canada to a Puerto Rican newspaper is dutiable. The importer was unable to prove that paper in 15½ inch rolls was chiefly used by newspapers when the Tariff Act was passed in 1930. Domestic witnesses provided by the Import Committee testified that such paper was chiefly used for other purposes such as salesbooks.

## Chillicothe Earns $150,625

The Chillicothe Paper Company officers and directors were reelected at the annual meeting, at which a net profit of $150,625 was reported for 1939, equal to $16.83 each on 6,921 shares of common stock compared with $19,612 in 1938.

Re-elected were: President Hector McVicker; Vice Presidents E. F. Bearce and A. P. Story; Secretary Lyle S. Evans.

Directors re-elected are McVicker, Bearce, Story, Fielding and Dr. L. E. Hoyt, all of Chillicothe, and O. A. Miller and William P. Baker of Columbus, O.

## Nekoosa-Edwards Nets $182,409

[FROM OUR REGULAR CORRESPONDENT]

PORT EDWARDS, Wis., March 25, 1940—Net profit of the Nekoosa-Edwards Paper Company for 1939 amounted to $182,409, compared with $20,956 in the preceding year, according to announcement by John E. Alexander, president and general manager. His report said the company's mills had been operated at 95 per cent of potential producing capacity, and that new machinery and equipment had helped to effect a substantial decrease in manufacturing costs.

## New Taylor Fulscope Controllers

Refinements in processing technique, increased production, and higher standards of product quality not only make operating conditions more difficult for process control instruments, but also increase the need for higher quality of control. To meet this demand, the Taylor Instrument Companies, Rochester, N. Y. have introduced a completely redesigned line of new Fulscope air-operated recording and indicating controllers for temperature, pressure, rate of flow, and liquid level.

NEW FULSCOPE CONTROLLERS.

Fulscope indicating controllers have the same unit construction, control mechanisms, and performance characteristics as recording types, but in single duty form only.

## Import 2,025,504 Tons of Pulp

WASHINGTON, D. C., March 28, 1940—Imports of wood pulp into the United States during 1939, amounting to 2,025,504 tons, were 18 per cent in excess of the preceding year but slightly under the 1937 total, according to preliminary figures compiled in the Forest Products Division, Department of Commerce.

The Scandinavian countries accounted for approximately 60 per cent of the aggregate United States wood pulp imports in the last calendar year, with Canada supplying the bulk of the remainder. During the past ten years, it is pointed out, Canada has progressively lost ground to Scandinavia as a supplier of wood pulp to the American market. The ratio of imports from the Dominion declined from 42 per cent in 1929 to 30 per cent in 1939 while in the same period the Scandinavian share rose by 10 per cent. Finland accounted for the largest percentage of the increase in this trade.

Since July 1939, imports of wood pulp into the United States from Germany have been negligible. On the other hand, imports from the smaller European countries have been growing, with Rumania, Estonia, and Latvia sharing in the increase.

Unbleached sulphite constituted the most important class of wood pulp imported into the United States in 1939, arrivals of this item, mainly from Scandinavia, totaling 661,338 tons. Canada, on the other hand, was the chief source of supply for bleached sulphite pulp, accounting for 252,750 tons out of total imports of 473,832 tons.

# Obituary

### Charles D. Waters

Charles D. Waters, 65, chief chemist for the Newton Falls Paper Company, died at his home in Newton Falls on March 13. Death was caused by a heart ailment.

Mr. Waters had been head chemist for the Newton Falls Paper Company for the past 13 years. Before that he had been employed by the General Electric Company in Ticonderoga and in Pennsylvania.

He was born in Johnson, Vt., May 26, 1874, the son of Samuel and Juliette Douglas Waters. He was graduated from the University of Vermont and then took a special course in chemistry at the Massachusetts Institute of Technology.

Mr. Waters is survived by his mother and his wife, both residing in Newton Falls; three sons, Douglass and Robert Waters of Newton Falls, and Charles Waters of Hampton, N. H., and one daughter, Miss Frances Waters of Newton Falls.

The funeral was held from the home in Newton Falls. The body was taken to Tupper Lake and from there will be sent to Hampton, N. H., for burial.

### Harris Shadur

[FROM OUR REGULAR CORRESPONDENT]

MILWAUKEE, Wis., March 25, 1940—Harris Shadur, 52, founder of the Shadur Paper Box Company, died Monday, March 18, at Mount Sinai Hospital here following illness with heart disease.

Mr. Shadur had been in the paper box manufacturing business for 33 years, and founded his present company eight and a half years ago. He also was the founder of the Iowa Paper Box Company at Des Moines.

Survivors are the widow and four sons, Meyer, Aaron, Melvin and Milton.

Funeral services were held March 20 at St. Paul, Minn., and burial took place there.

### Joseph E. Brown

Joseph E. Brown, an officer of many corporations, died March 14 at Kalamazoo, Mich., at the age of 74.

He was president of the Reed Foundry and Machine Company, and of the Kalamazoo Trading Company, and was vice-president of the Bryant Paper Company, Kalamazoo Railway Supply Co. and the Park American Hotel Company. Mr. Brown served overseas with the Red Cross during the former world conflict.

## Annual Power Conference

The third annual Midwest Power Conference will be held at the Palmer House, Chicago, Ill., April 9 and 10. Sponsored by the Armour Institute of Technology, with seven middle-western universities and colleges and several engineering societies cooperating, the conference is primarily held for the discussion of the production, transmission and consumption of power.

A special paper will be presented on April 9 by Grover Keeth, chief engineer, Marathon Paper Mills Company, Rothschild, Wis., on the subject of "Paper Mill Power".

## Waste Material Dealers Meet

The National Association of Waste Material Dealers held its 27th annual convention at the Hotel Astor, New York on March 18-21, Harry S. Goldstein of L. Goldstein Sons, Philadelphia, was re-elected president.

Mr. Goldstein was the principal speaker at the general session on the opening day. He cautioned the trade against ignoring the possibility that in the next four or five months "we may be flooded with foreign business and commodities may once more be higher and the demand from our own customers may once more be extremely active".

At the session on March 20 M. C. Dobrow, executive secretary of the Writing Paper Manufacturers Association, summarized a research report on the relationship of the prices for cotton cuttings and cotton in the bale. The report presented indicated that over the last twenty-five years the price of new cotton cuttings follows the price of cotton in the bale. "Every major increase or decline in the price of cotton, with three exceptions, was followed in one to six months by a corresponding increase or decline in the price of new cotton cuttings."

"The diminishing supply of suitable paper making rags, even though consumption is less, has kept prices relatively high. It is for this reason that the rag content paper industry is constantly in search for newer fibers at lower cost which, together with improved technology and processing, will maintain the quality of the product."

Morris S. Rosenthal, vice- president of Stein-Hall & Company, spoke at the closing session and pointed out that belligerent nations are diverting their plants from normal peace-time needs and this is causing a vast change in the total world production of various products, and important changes in the percentages of world output of particular products now being made by individual nations. Mr. Rosenthal advised dealers to exercise unusual care in the selection of both foreign sources for materials and foreign outlets.

## Empire State TAPPI to Meet

The Empire State Section of the Technical Association of the Pulp and Paper Industry will meet at the Van Curler Hotel, Schnectady, N. Y. on April 5-6, 1940.

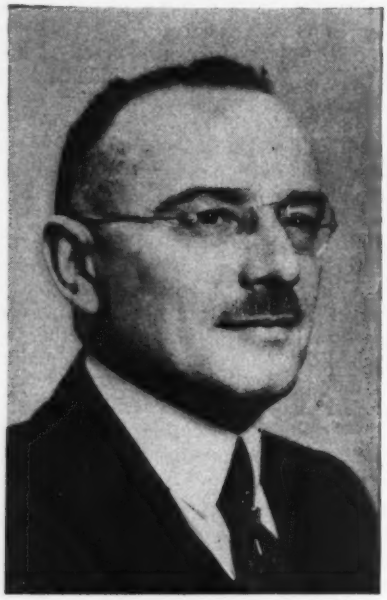
The first session will be on Friday morning at 10:30 A.M. in Rice Hall of the General Electric Company's plant where the House of Magic and development of the research laboratory will be presented. This will be followed by a luncheon as guests of the G. E. and in the afternoon there will be a visit to the plant. In the evening a banquet will be held at the Van Curler Hotel, followed by the presentation of the sound color film of the International Printing Ink Company entitled "Keeping in Touch". Following this will be dancing.

On Saturday morning two technical papers will be presented: "Chemical Utilization of Lignin and Wood Waste" by E. C. Jahn, professor of the New York State College of Forestry, Syracuse, N. Y., and "Wetting Agents—Their Composition and Characteristics" by J. H. Shipp of the Technical Laboratory, Fine Chemical Div., E. I. duPont de Nemours. A working model of the new save-all of W. C. Laughlin Company will be exhibited.

## W. M. Stocker to be Chief Engineer

The Cameron Machine Company announces the appointment of William M. Stocker as chief engineer. Mr. Stocker succeeds R. Mc C. Johnstone who resigned from the company some months ago. The promotion of Mr. Stocker to his present responsibilities is a quite logical and natural development.

Mr. Stocker came to the Cameron Machine Company well recommended in February 1925. For several years, as service manager, he was in close touch with the company's customers and made many friends and acquaintances who can testify to his untiring efforts to furnish the closest kind of co-operation. As assistant chief engineer, Mr. Stocker was in large



WILLIAM M. STOCKER

part responsible for many of the exclusive design features now incorporated in Cameron winders, rewinders and slitters.

Mr. Stocker was born in the city of New York, but spent his early years in Europe. He was educated in England where he attended the Northern Polytechnic Institute, Holloway, London, England, and was graduated in mechanical engineering from the Royal Technical Institute, Manchester, England.

In 1914, Mr. Stocker was chief engineer of Benjamin Eastwood Company, Paterson, N. J., manufacturers of textile machinery where he remained until 1917 when he entered the U. S. Army. He was given an assignment as squad boss of tank design in the Tank, Tractor and Trailer Division of the Ordnance Department. As mechanical engineer with Poole Engineering and Machine Company, Woodberry, Baltimore, Md., Mr. Stocker worked with the Navy Engineering Staff on the design of special high speed gearing for use on rigid air ships.

Just prior to joining the Cameron organization, Mr. Stocker spent three years as chief engineer of F. X. Hooper, Glenarm, Md., well known manufacturers of printers, slotters and scorers.

The engineering department of Cameron Machine Company is especially active at this time due to a number of new developments the Company is pushing to completion. The plant, too, is now operating at capacity with every indication that there will be no let-up in activity for some months to come.

## Logging Graphically Presented

[FROM OUR REGULAR CORRESPONDENT]

VANCOUVER, B. C., March 26, 1940—Logging operations on lower Vancouver Island are now being graphically presented to members of service clubs, boards of trade and other groups on Vancouver Island through the medium of color motion pictures. These are being shown by the British Columbia Forest Preservation Department under the direction of G. P. Melrose.

Prior to the presentation of the film, Mr. Melrose speaks briefly, emphasizing the importance of logging to the province of British Columbia, and informing the members that in 1938 Great Britain had imported 3,500,000,000 board feet of lumber, 20 per cent of which had come from British Columbia.

"Forest preservation, preserves our scenic beauty and game, which encourages trade. A survey last year showed that the province of British Columbia alone had earned $30,000,000 from the tourist trade," he states.

"British Columbia logs off about 50,000 acres a year. Only one-half of this area will reproduce. We burn 54,000 acres of slash under control," says Mr. Melrose, in speaking of methods of logging in the province.

The film shown by the speaker portrays natural scenery, forest reproduction, methods of logging, game, logging equipment, logging operations, effect of logging, second growth, seedling trees, effects of forest fires or slash fires improperly controlled and government work in connection with forest preservation.

## Licensed to Use Secondary Head Box

The Hummel-Ross Fibre Corporation, which recently announced the licensing of the International Paper Company and Southern Kraft Corporation to use the secondary head box under certain patents, now announces the licensing of the Eddy Paper Corporation and Kieckhefer Container Company.

The secondary head box is a device which improves the quality and lowers the manufacturing cost of fibre liners used in the corrugated box industry.

Among the other licensees on the North American continent are: Union Bag and Paper Corporation at Savannah; Filer Fibre Company, Filer City, Mich.; Albemarle-Chesapeake Corporation, West Point, Va., and the Ocean Falls mill of the Zellerbach Corporation.

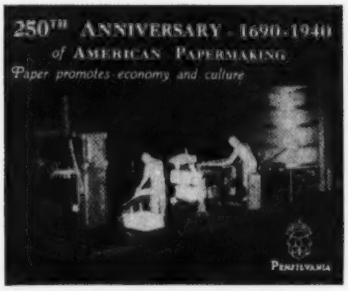
## Argentina Imports More Newsprint

Imports of newsprint into Argentina during 1939 reached a total of 146,191 metric tons as against 126,591 metric tons in 1938, according to a report from the office of the American Commercial Attache, Buenos Aires. Finland continued to be the leading source of supply, furnishing 54,406 tons of the 1939 receipts. Canada, with 32,698 ranked second, and Sweden, with 26,892 tons, third. Imports from the United States were negligible, amounting to only 103 tons.

## Founders of American Papermaking

William Rittenhouse, papermaker by trade, Mennonite minister by profession, Prussian by birth, Dutch citizen by naturalization, emigrated to Pennsylvania in 1688 and became the first Mennonite preacher in the Commonwealth, at Germantown. Two years later, obliged no doubt by the meagre emolument to increase his income, he formed a partnership with the progressive first printer of Philadelphia, William Bradford Jr., to manufacture paper.

Their capital being too small, three well-to-do Philadelphians, Samuel Carpenter, Robert Turner, and Thomas Tresse were induced to participate.




Klass Rittenhouse, a son of William was engaged to assist, and was later admitted to the firm.

To the initiative, capital and labor of these men, the paper trade and industry of America owe their foundations. Printing in the Colonies had proceeded for fifty-two years depending upon imported paper. The formation of this partnership in 1690, proved not only to be the emancipation of American printers from foreign sources of supply, but the cornerstone of the greatest paper industry the world has ever known.

Of these six men, only the fame of Bradford the celebrated printer is known beyond a too small circle. A marker on the Rittenhouse dwelling in Fairmount Park, Philadelphia, indicates it chiefly as the birthplace of David Rittenhouse, "astronomer and mathematician." "Near this site in 1690," it laconically states, "William Rittenhouse built the first paper mill in America." It is scarcely too much to say that of the founders of the American paper industry, five are "forgotten men."

As a slight but sincere token of regard for these founders, and a reminder that "paper promotes economy and culture," the stamp commemorating the 250th aninversary of American Papermaking has been produced—and it actually depicts the process as carried on both at the first and the last of American hand-made paper mills.

The illustration is reproduced from a photograph of the model in the Paper Museum of Crane & Co., at Dalton, Mass. The workers at the lately abandoned mill of Lime Rock, Conn., served as models for the sculptor George Moore. The miniature equipment made to scale by Dard Hunter, who designed the ensemble, is faithful to the last degree. Aside from the inscription, the only other addition is the facsimile of the second watermark of William Rittenhouse.

During this year of 1940, the printers throughout America are publicizing the 500th anniversary of the invention of printing from movable type in Germany. Our own government lately issued a stamp commemorating the 300th anniversary of printing in the United States. The joint initiative of a printer and a papermaker in establishing the first American paper mill is no less noteworthy. As this mill produced both "coarse" and "fine" paper, its founding is important to all branches of the paper trade. To spread the slogan "Paper Promotes Economy and Culture," while commemorating the bold enterprise of our pioneer papermakers would be a graceful acknowledgement of the debt we owe them.

Stamps may be obtained at $5.00 per thousand from William Bond Wheelwright, 10 Forest street, Cambridge, Mass.

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## Background of American Papermaking

THE BACKGROUND AND ECONOMICS OF AMERICAN PAPERMAKING, BY LOUIS TILLOTSON STEVENSON, (New York: Harper & Bros., 1940, Pp xiii, 249, $3.00).

Here is a book that has long been needed. It presents a thorough and concise picture of the paper industry in its economic and historical aspects. The author has had a unique training which has prepared him to handle the subject with the authority of years of actual experience in papermaking and a sound scholastic training.

Starting with a history of the papermaking processes and their development down to the present, the author has succeeded in giving an interesting background for the rest of the book. The balance of the book is organized around the fundamental law of supply and demand. A chapter is devoted to analyzing each of the supply factors namely labor, capital, natural resources, and organization in the industry. The combination of these supply factors in forming the cost of production is next developed in the chapter on cost behavior. High "start up" expenses and other pressures to maintain continuity of production are pointed out.

The demand for paper is an important element in the determination of prices. It is carefully considered and analyzed. Elasticity of demand and grade shifting are described and their effects on the price structure is brought out. In Chapter Eight, price behavior is discussed. Price behavior in recovery and recession and price control attempts conclude the chapter.

The dynamic behavior of the industry and its relation to the business cycle form the subject of one of the best chapters in the book. The author's work in this field is well known and his conclusions have become rather generally accepted.

The combination movement and social control of the industry are carefully considered. The author believes that the economic factors present in the industry tend to make it self-regulatory provided that competition is maintained.

The book closes on a note of optimism for the future of the industry in the United States.

The subject matter is well coordinated and the interest is well maintained. The style is readable, simple, and direct.

The book is a definite addition to the literature of papermaking.

(Note—Copies may be obtained from the Book Department of the Technical Association of the Pulp and Paper Industry, 122 East 42nd street, New York, N. Y.)

## Indianapolis Demand Steady

[FROM OUR REGULAR CORRESPONDENT]

INDIANAPOLIS, Ind., March 25, 1940—Early spring paper demand seems fairly steady in volume in practically all lines. There are indications of a good spring business in the entire field. Fine paper demand, according to local jobbers, is steady and will compare favorably with that of a year ago. Prices are being firmly held in all lines. The printing trade is somewhat spotted, with some shops apparently having all they can do and others with virtually no business. This naturally is noted in the fine paper demand. The average is fairly high for this time of the year, however.

Weather more suitable to the building trade has increased demand for all lines of building papers and roofing. The rural demand this year is expected to be notably good. It seems certain now that, in spite of the poor start the first two months of the year, that building paper volume will be on a par with that of last year. This entire month has shown an exceptionally high volume and builders say there is a huge volume of small construction in the offing.

Makers of paper boxes report a good volume. Some of the larger factories here in the last week or so have curtailed operations slightly, but generally, production is on a capacity basis. One of the largest plants now is operating, temporarily, on three six-hour shifts, where for a time they had been operating three 8-hour shifts. Demand from distilleries, glass factories and breweries has shown a big increase in the last month. Preparations now are being made for the opening of the ice cream trade.

Summer specialties are in some demand, even though temperatures are far from summery. Retailers are looking at the calendar rather than the temperature. Some good deals are being offered and it is predicted demand will be as good as a year ago.

While no price changes have been reported the rag market is quiet. Mill demand is low. Some small reductions have been made in the waste paper market and mill demand remains quiet.

## Kalamazoo TAPPI Meets

The regular March dinner meeting of the Kalamazoo Valley Section of TAPPI was held at the Park American Hotel in Kalamazoo, Michigan on Thursday evening March 7. Warren Chilson of the Hooker Electro-chemical Company was the speaker and he discussed pulp bleaching.

Mr. Chilson's talk centered around the advisability of a paper mill installing its own bleaching equipment. He discussed many of the factors involved such as the spread in price between bleached and unbleached pulp, the possibility of the mill being able to confine its purchases to fewer brands and the ability to arrive at special properties which might not be available on the market. The relative merits of the batch and continuous systems were discussed as to their adaptibility in any given mill.

Following presentation by Mr. Chilson the subject matter was thrown open to discussion by the Chairman, Wm. (Daddy) Kirkpatrick II.

Through the courtesy of the American Cyanamid and Chemical Corporation, a movie on The Manufacture of Tapioca Flour was presented to finish out a very profitable evening.

Those in attendance were—Sam I. Anderson, Hooker Electrochemical Company; Harry C. Bradford, Rex Paper Company; Robert Buss, Hercules Powder Company; Ray L. Barton, Michigan Paper Company; N. J. Berger, Armstrong Machine Works; Warren A. Chilson, Hooker Electrochemical Company; Charles Cook, National Casein Sales; Charles R. Cushman, MacSimBar Paper Company; Olin W. Callighan, Edgar Brothers Company; Paul deGuehery, Michigan Paper Company; H. D. Eliason, Frank B. Eilers, Orr Felt and Blanket Company; Merton S. Fogerty, Michigan Paper Company; Tom Falkner, Edgar Bros. Company; R. D. Freeman, Dow Chemical Company; Brinton E. Freeman, Henry M. Gible, Walter Hadley and J. A. Heenan, Sutherland Paper Company; W. F. Hathaway, Kalamazoo Vegetable Parchment Company; V. Heinmuller, American Cyanamid and Chemical Corporation; H. F. Heller and A. R. Kloosterman, Hercules Powder Company; W. Kent Kidder, Bryant Paper Company; W. A. Krkpatrick, Allied Paper Mills; Gerrit Klunbrinp, MacSimBar Paper Company Myron Kim, Dow Chemical Company; J. O. Logan, Mathieson Alkali Company; Frank Libby, L. H. LaLiberte and Geo. H. Rice, Kalamazoo Vegetable Parchment Company; Wm. H. Monsson, Hooker Electrochemical Company; Martin J. Roberts, Dow Chemical Company; M. W. Phelps, Solvay Process Company; Al. Perlick, Kalamazoo Vegetable Parchment Company; G. C. Schmid, Mich. Paper Company; Hubert Smith, Lee Paper Company; Fred Shankwiler, Hercules Powder Company; C. C. Schneider, Hawthorne Paper Company; Edmund B. Taylor, American Cyanamid and Chemical Corporation; E. Uebrick, Dunn Sulphite Paper ompany; Joe Waber and E. F. Whittington, Rex Paper Company; W. F. Wolfe, MacSimBar Paper Company; Arthur Weinland, Lee Paper Company; Merle R. Wilkins, Bryant Paper Company; James A. Wise, Kalamazoo Paper Company, and James R. Berdon, American Cyanamid and Chemical Corporation.

## J. W. Corey Made Sales Vice President

James W. Corey, since 1932 general sales manager of the Reliance Electric and Engineering Company, Cleveland, was elected sales vice-president at a meeting of the company's directors, held March 21.

Mr. Corey started in the Engineering Department of Reliance in 1911. He transferred to the sales department in 1916, and in 1927 was made assistant sales manager. He was appointed general sales manager in 1932, and was elected a director of the company in 1935.

Officers re-elected by the directors were: Clarence L. Collens, president; H. Morley Hitchcock, vice-president and treasurer; A. M. MacCutcheon, engineering vice-president; C. V. Putnam, secretary, and H. F. Walters, assistant treasurer.

## Speak on Kimberly-Clark Lines

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., March 25, 1940—Mr. Smith, plant manager, and Mr. Farrell, of the New York office of the Kimberly-Clark Corporation, spoke on two leading lines of paper made by that company at a sales meeting of Carter Rice & Co., Corp., held from 8 until 10 o'clock Saturday morning. A highly interesting moving picture, showing the manufacture of paper from start to finish was flashed on the screen.

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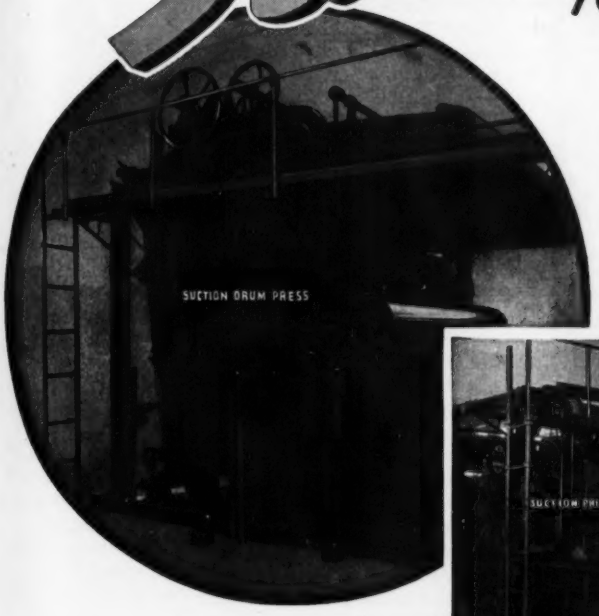
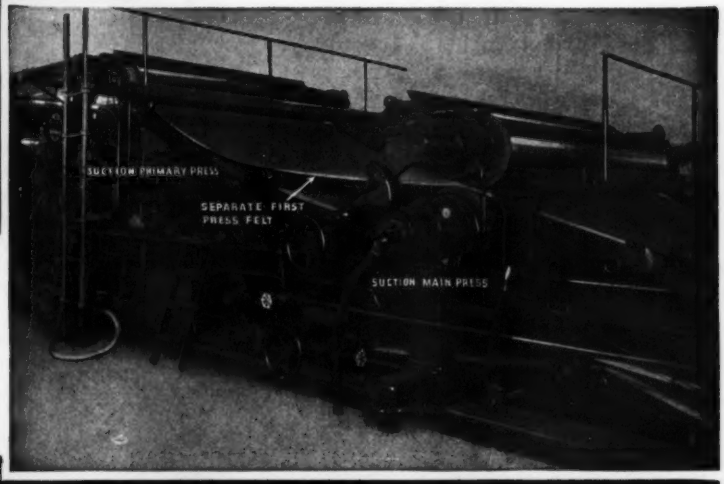
PRIMARY PRESS
MAIN PRESS




**Note the short top felt for suction drum press nip. All plain primaries have been removed.**

**Wet pickup felt returns after suction primary press. Suction first press is on separate felt.**

1. Removes large quantity water without disturbing formation or finish.
2. Reduces crushing and checking.
3. Improves finish. Reduces felt marks.
4. Permits use of light weight short top felt. Lower felt cost.
5. Eliminates several nips. Improves test of board.
6. Permits more bulk if desired.
7. Increases test or permits cheaper furnish and maintain same test.
8. Suction main press more efficient on separate felt.

* Suction drum press is equivalent to suction drum and suction primary press.

BELOIT IRON WORKS PAPER MACH'Y BELOIT WIS.

*THE BELOIT WAY IS THE MODERN WAY*

**BELOIT IRON WORKS, BELOIT, WIS.**

# CONSTRUCTION NEWS

**Chicago, Ill.**—The Cromwell Paper Company, 4801-39 South Whipple street, manufacturer of paper specialties, bags, etc., has completed plans for new addition to converting plant, consisting of a one-story structure, about 129 x 280 feet, reported to cost over $65,000, with equipment. A building permit has been issued for immediate erection, for which contract has been let to Anderson & Winblad, 6235 South Michigan avenue, Chicago. A Epstein, 2001 West Pershing road, is architect and engineer.

**Elkhart, Ind.**—The American Coating Mills, Inc., has completed plans for new pumping station at mill, on site on Division street, including a tunnel about 108 feet long, for pipe line connections. Work will be placed under way soon. C. A. Nelson, 1401 South Main street, South Bend, Ind., is consulting engineer.

**Portland, Ore.**—The Western Waxed Paper Company, North Portland, manufacturer of waxed and other processed paper stocks, has begun work on one-story addition to mill, recently referred to in these columns. Excavation work is in charge of Fred Christensen, 1017 S. E. Thirty-fourth street, Portland, and site will be ready for superstructure at early date. It is reported to cost about $45,000, with equipment. General erection contract has been let to Reimers & Jolivette, Railway Exchange Building, Portland. Company is a division of the Crown Zellerbach Corporation, 343 Sansome street, San Francisco, Calif.

**Lancaster, Pa.**—The Armstrong Cork Company, manufacturer of insulating board specialties and other board products, has asked bids for extensions and improvements in local mill, including certain interior alterations. No estimate of cost announced.

**Baltimore, Md.**—The Oscar T. Smith & Son Company, 407 East Saratoga street, paper products, has plans for new two-story addition, 100 x 100 feet, for expansion in lithographing plant. It is reported to cost in excess of $50,000, with equipment. Work is scheduled to be carried out in the spring. Kubitz & Koenig, Emerson Tower Building, are consulting engineers.

**Chicago, Ill.**—The H. P. Smith Paper Company, 1129 West 37th street, manufacturer of paper products, has begun erection of new plant in the Clearing Industrial District, at West 66th street and La Vergen avenue, recently referred to in these columns, and will complete the structure during the summer. It will be equipped for paper-converting service and will be one-story and basement, 200 x 246 feet. Cost esitmated close to $150,000, with equipment. Construction is under the direction of the Clearing Industrial District, Inc., 6455 Central avenue.

**Roanoke, Va.**—The American Viscose Corporation, Marcus Hook, Pa., manufacturer of viscose rayon products, has asked bids on general contract for extensions and improvements in mill at Roanoke, including interior alterations. Work is reported to cost over $50,000, with equipment. The Ballinger Company, 105 South Twelfth street, Philadelphia, Pa., is architect and engineer.

**Meridian, Miss.**—The Flintkote Company, 50 West 50th street, New York, N. Y., manufacturer of roll roofing products, insulating board specialties, etc., is arranging for utilities for its proposed new mill on site near Meridian, recently acquired. An award for electric power service has been made to the Mississippi Power Company, Meridian, which will extend transmission line to the mill site, where a power substation will be located for step-down operation. Work is reported to cost over $100,000, and will be placed under way at early date. For necessary gas supply, company has contracted with the Peoples Water & Gas Company, Meridian, which will begin work soon on extending pipe lines to mill site. A meter house and control station will be built. This installation, similarly, will cost in excess of $100,000. For water requirements, the company has leased a new waterworks station and pipe lines to be constructed by the municipality, covering a term of 25 years. The city has authorized a bond issue of $100,000 to carry out the work, which is scheduled to begin soon. As recently noted in these columns, company is having plans completed for the new mill by the Rust Engineering Company, Clark Building, Pittsburgh, Pa., and Martin Building, Birmingham, Ala., and it is expected to award contracts for excavations and superstructure at early date. Main unit will be one-story, 300x1200 feet, with a number of auxiliary structures. It will be equipped for the production of insulating board and wall board specialties, from wood fiber, and will represent an investment of approximately $2,000,000. Completion is scheduled early in 1941.

**Philadelphia, Pa.**—The J. E. Doepel Company, 610-20 North Fourth street, manufacturer of paper boxes and containers, is removing its plant to new location at 626 Race street, and will discontinue operations at first noted location. Company is disposing of various equipment at former plant, not required at new location, where production will be concentrated on certain lines of box manufacture.

**Painesville, Ohio**—The Industrial Rayon Corporation, West 98th street and Walford avenue, Cleveland, Ohio, manufacturer of cellulose rayon products, has asked bids on general contract for proposed new additions to branch mill near Painesville, recently noted in these columns, consisting of main one-story structure, 90 x 455 feet, and several smaller units, including a fourth story extension to present chemical preparation building. Large increased capacity will be carried out. It is expected to begin erection at early date. Cost estimated close to $4,000,000, with machinery. Wilbur Watson & Associates, 4614 Prospect avenue, Cleveland, are engineers. Hiram S. Rivitz is president.

**San Francisco**, Cal.—The Paterson Pacific Parchment Company, 340 Bryant street, an interest of Paterson Parchment Paper Company, Bristol, Pa., manufacturer of vegetable parchment stocks, kraft and other paper specialties, has approved plans for new four-story storage and distributing plant, to be used as a direct factory branch, and will proceed

with erection at once. General construction contract has been awarded to Cahill Brothers, 260 Sansome street, San Francisco. Cost estimated over $85,000, with equipment. E. H. Denke, 1317 Hyde street, is architect, and L. H. Nishkian, 525 arket street, engineer, both San Francisco.

### New Companies

**Brooklyn, N. Y.**—The Visulite Container Corporation has been organized under Delaware laws, with capital of 1000 shares of stock, no par value, to manufacture and deal in cellulose and other boxes and containers. The incorporators include William T. Crowell and Theodore G. McGird, Brooklyn; and Michael J. Madar, Forest Hills, L. I. New company is represented by Edward Hillman, Wilmington, Del.

**New York, N. Y.**—The Burke Paper Mills Supply Corporation has been incorporated with capital of 300 shares of stock, no par value, to deal in paper products of various kinds. New company is represented by Joseph F. Clements, 51 Chambers street, New York, attorney.

## Tools of the Chemist

"The tools of the chemist, their ancestry and American evolution" is the title of a 220-page book written by Ernest Child and published by the Reinhold Publishing Corporation, 330 West 42nd street, New York, at $3.50 a copy.

It presents the story of laboratory apparatus development as a part of the history of chemical progress and education in America. As such, the author has selected the outstanding events and the contributions of men who have played a significant part in the creation and development of chemical laboratories and apparatus in America. This study includes the European background from which American progress developed.

Part one includes people and events in American chemistry. Part two, on the ancestry and development of American chemical laboratory apparatus, includes balances, glass, porcelain and silica ware, filter paper, heating devices, metal laboratory ware, platinum, alundum, rubber ware and optical apparatus. Part three is a survey on distributors of laboratory apparatus. The book is enhanced with many illustrations of historical value and interest.

## Large Rubber Covered Rolls

Among the large rolls covered by the American Wringer Company for use in the paper industry are five of a really outstanding character. The dimensions of these rolls are as follows: 1. 303½ x 38 inches. 2. 256¼ x 36 1/32 inches. 3. 238 v 30 inches. 4. 264 x 34 inches. 5. 317 x 17 inches. All of the rolls were covered in the mill of the American Wringer Company at Woonsocket, R. I., with the exception of the 303½ x 38 inch rolls which were covered at Farnham, Quebec for the Bagley & Sewall Company and are believed to be the largest rolls ever covered.

## Norway Makes More Newsprint

Production of newsprint in Norway during 1939 is estimated at 205,000 metric tons, an increase of 34,000 tons over the 1938 production, according to a report from the American Consulate General, Oslo.

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**A brilliantly WHITE, pure titanium dioxide possessing excellent . . .**

**• OPACITY**

**• BRIGHTNESS**

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*Suitable for ALL types of paper ranging from thin printing papers and waxing tissues to coated book and magazine stocks.*

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TRADE JOURNAL
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Henry J. Berger
EDITOR

Vol. 110 · March 28, 1940 · No. 13

## COMING EVENTS IN PAPER INDUSTRY

TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY, Fall Meeting, Olympic Hotel, Seattle, Wash., August 20-23.

NEW ENGLAND SECTION. Technical Association of the Pulp and Paper Industry—Third Friday of each month at the Roger Smith Hotel, Holyoke, Mass.

DELAWARE VALLEY SECTION. Technical Association of the Pulp and Paper Industry—Second Friday of each month at the Engineers Club, Philadelphia, Pa.

LAKE STATES SECTION. Technical Association of the Pulp and Paper Industry—Second Tuesday of each month at the Conway Hotel, Appleton, Wis.

KALAMAZOO VALLEY SECTION. Technical Association of the Pulp and Paper Industry—First Thursday of each month at the Park, American Hotel, Kalamazoo, Mich.

AMERICAN PULP AND PAPER MILL SUPERINTENDENTS ASSOCIATION, Annual Convention, Netherland Plaza Hotel, Cincinnati, Ohio. June 18-20.

NATIONAL SAFETY COUNCIL, PAPER AND PULP SECTION, Annual Meeting, Stevens Hotel, Chicago, Ill. October 7-11.

## LABOR LAW CHANGES

Changes in the National Labor Relations Act proposed by Representative Howard W. Smith, chairman of the committee which investigated the Labor Board, would have made the law more equitable for employer and employee. It is difficult to understand how any fair adjustment of the differences between employer and employee can be made unless the revealed deficiencies in the Act itself as well as defects in the conduct of the Labor Board are remedied. The Smith amendments would have improved the present set-up but a vote to reconsider the Smith amendments was lost on March 20 when the committee voted against the Smith amendments which included the following proposals:

A proposal to grant employers freedom of speech with respect to utterances on union matters provided they were not accompanied by intimidation, threats, coercion or discrimination. (2). Redefinition of the term collective bargaining which would have made unnecessary employers' counter-proposals in employer-employee bargaining. (3). Redefinition of the term employee which would have prohibited reinstatement of employees found to have engaged in a sit-down strike, willful violence or unlawful destruction of property.

Senator Wagner stated recently that he favored the addition of two men to the National Labor Relations Board and indicated that the five-man body could take whatever action was necessary to remedy the defects of the Board as revealed by the investigation committee. Admitting that the Smith committee supplied evidence "about the conduct of some members of the staff of the National Labor Relations Board which is highly undesirable," Senator Wagner added, "These wrongs should be remedied, but such difficulties in personnel administration provide no foundation for the sweeping proposals in the Smith amendments. The effect of the Smith free speech proposal was not to uphold the Constitution but rather to overrule decisions of the Supreme Court and thus to allow unfair practices which the court has repeatedly held there is no constitutional right to enjoy. By this amendment the substantial justice embodied in many Supreme Court Decisions would be undone and the way would be opened for the return of the company-dominated union.

A third procedural change vests in a newly created administrator, appointed by the President and acting independently of the Labor Board, every function now vested in the board except that of actual decisions of cases and conduct of elections. Such a dismemberment of functions and divisions of responsibility would defeat the just expectation of industry and labor that there be prompt and effective administration of the national labor policy. There would be nothing to prevent the administrator from adjusting cases on a basis entirely different from those laid down in the board's decisions, or from refusing arbitrarily to issue a complaint in a case clearly within the board's province. The division of responsibility and confusion of policy reach farcical heights in the proposals that the administrator, not the board, should direct and control litigation in the courts for enforcement of orders issued by the board. The election procedure required under the amendment is obviously unsound. Analysis of the proposal to separate the powers of the board indicated that it could operate only to impede progress toward democracy and peace in American industry".

It seems clear that, while the Smith amendments may not be without defects, they are based upon the most comprehensive study of the act that has been made and if these or similar changes are made in the labor law it will at least correct many of the abuses which the investigation has revealed. It also seems clear that as more is learned of the procedure of the National Labor Relations Board, the more urgent appears the need for a change. The methods of the board were condemned by its own staff, according to a report disclosed on March 21 in which it was stated that W. M. Leiserson, a member of the Labor Board asserted that chairman J. Warren Madden and Edwin S. Smith shelved the report over the protests of Mr. Leiserson. This 10,000 word report, in the hands of the Smith committee was made to the board in October and criticized the personnel policy, particularly the "bottle-neck" alleged to exist in the office of Nathan Witt, secretary of the board.

According to the committee's findings some of the conclusions reached regarding the report were as follows: "(1) The administrative division is insufficiently organized. (2) By reason of lack of organization the administrative process has suffered in effectiveness. (3) Too many functions are centralized in the secretary's office and there is too little delegation of responsibility. (4) As a result of overcentralization the secretary's office is over-burdened with work. (5) There is too little coordination between various Washington divisions. (6) There is too much isolation and too little coordination between Washington and regional offices. (7) A definite personnel policy is lacking. (8) The board is participating in too many administrative details."

In commenting on the above report J. Warren Madden, chairman of the National Labor Relations Board denied that the above report was pigeon-holed and asserted that some of the recommendations were considered and increase of personnel planned. Mr. Madden added: "The board has constantly sought to improve its procedures and has frequently examined its own administrative process with a view to improvement. For some time we have realized that the secretary's office has been understaffed and able to perform its numerous functions only by overwork on the part of its small staff".

Although the American Federation of Labor favors reconstruction of the Labor Board and has proposed some amendments, the Congress of Industrial Organization has announced its unalterable opposition to the Smith amendments. When the committee reconvened on March 26 it began the consideration of the amendments covering the unit rule, which is the crux of the A. F. of L. and C. I. O. controversy. The proposal to separate the judicial from the administrative duties of the Labor Board is also scheduled for consideration and it is to be hoped that the present labor law and its administration will be considerably improved.

## Mohawk Paper Mills Expand

COHOES, N. Y., March 25, 1940—The Mohawk Paper Mills, Inc., has started construction of a new addition to its plant here which will cost about $40,000. The addition is to be a structure of two stories and basement. It will be located on the southern end of the present plant and will be 175 by 50 feet. It is expected that the work will be completed early in the summer. With the completion of the structure it will allow the transfer of a portion of the finishing operations from the old Kavanaugh mill at Waterford to the local plant. The space in the Kavanaugh mill is rented by the paper company but will be abandoned in the near future. The construction of the new addition is in charge of the John P. Sewell Company of Albany. City officials have sent a communication to the contracting concern requesting that residents of this locality be employed on the construction job.

## Production Ratio Report

These statistics are based upon papare production reports to the American Paper and Pulp Association.

COMPARATIVE MONTHLY SUMMARIES[1]

| Months | 1940 | 1939 | 1938 | 1937 | 1936 | 1935 | 1934 |
|---|---|---|---|---|---|---|---|
| January | 90.6% | 77.5% | 63.9% | 90.3% | 76.1% | 65.8% | ..... |
| February | 86.5% | 81.7% | 68.7% | 90.1% | 77.9% | 70.0% | ..... |
| March | ..... | 84.0% | 69.6% | 90.3% | 76.0% | 70.5% | ..... |
| April | ..... | 82.9% | 68.3% | 92.1% | 82.3% | 70.0% | ..... |
| May | ..... | 80.2% | 69.0% | 90.6% | 81.6% | 69.4% | ..... |
| June | ..... | 79.7% | 66.0% | 87.3% | 80.7% | 72.3% | ..... |
| July | ..... | 75.2% | 72.0% | 81.8% | 77.3% | 64.9% | ..... |
| August | ..... | 82.9% | 77.2% | 82.9% | 81.5% | 70.9% | ..... |
| September | ..... | 88.7% | 76.3% | 78.6% | 80.5% | 71.9% | 58.2% |
| October | ..... | 96.6% | 82.5% | 73.5% | 87.6% | 75.6% | 64.7% |
| November | ..... | 97.2% | 79.6% | 61.9% | 88.0% | 75.3% | 61.7% |
| December | ..... | 91.1% | 74.4% | 54.5% | 85.9% | 71.2% | 59.6% |
| YEAR AVERAGE | ..... | 84.9% | 72.3% | 80.6% | 81.3% | 70.5% | ..... |
| First 11 weeks | 88.0% | 80.6% | 67.0% | 90.2% | 76.8% | 68.0% | ..... |

COMPARATIVE WEEKLY SUMMARIES[1]

| CURRENT WEEKS, 1940 | | CORRESPONDING WEEKS, 1939 | |
|---|---|---|---|
| February 10 | 88.2% | February 11 | 82.8% |
| February 17 | 86.8% | February 18 | 82.6% |
| February 24 | 87.1% | February 25 | 80.6% |
| March 2 | 83.9% | March 4 | 83.5% |
| March 9 | 84.2% | March 11 | 84.2% |
| *March 16 | 83.7% | March 18 | 82.3% |

The following statistics show the number of mills reporting by ratio groups:

| | Number of Mills Reporting—Current Weeks | | | | | |
|---|---|---|---|---|---|---|
| Ratio Limits | Feb. 10, 1940 | Feb. 17, 1940 | Feb. 24, 1940 | Mar. 2, 1940 | Mar. 9, 1940 | Mar. 16, 1940 |
| 0% to 50% | 46 | 50 | 47 | 54 | 58 | 52 |
| 51% to 100% | 255 | 249 | 252 | 240 | 220 | 157 |
| Total Mills Reporting | 301 | 299 | 299 | 294 | 278 | 209 |

PAPERBOARD OPERATING RATIOS

Per cents of operation based on "Inch-Hours" reported to the National Paperboard Association.

| Year | Jan. | Feb. | Mar. | Apr. | May | June | July |
|---|---|---|---|---|---|---|---|
| 1936 | 62% | 67% | 67% | 70% | 69% | 70% | 69% |
| 1937 | 80% | 86% | 86% | 88% | 85% | 77% | 66% |
| 1938 | 54% | 60% | 61% | 57% | 58% | 56% | 57% |
| 1939 | 60% | 67% | 71% | 69% | 64% | 67% | 63% |
| 1940 | 71% | .... | .... | .... | .... | .... | .... |

| Year | Aug. | Sept. | Oct. | Nov. | Dec. | Year Avg. |
|---|---|---|---|---|---|---|
| 1936 | 75% | 78% | 82% | 80% | 74% | 72% |
| 1937 | 74% | 69% | 65% | 55% | 45% | 73% |
| 1938 | 66% | 66% | 70% | 65% | 59% | 61% |
| 1939 | 72% | 74% | 84% | 81% | 71% | 70% |
| 1940 | .... | .... | .... | .... | .... | .... |

Week end. Feb. 10, 1940—71%
Week end. Feb. 17, 1940—70%
Week end. Feb. 24, 1940—69%
Week end. Mar. 2, 1940—69%
Week end. Mar. 16, 1940—70%
Week end. Mar. 9, 1940—69%

[1] Production-capacity ratios are based upon six-day capacity ratings which are adjusted periodically to correspond with the ratings reported by individual companies. Ratios are subject to revision until all reports are received.

* Preliminary figure.

## Simplified Practice Containers for Cups

The Standards Committee of the Cup and Container Institute, Inc., recently drafted a proposed Simplified Practice Recommendation for Heavy-Duty, Round, Nesting Paper Food and Drink Containers and Lids, and requested the Division of Simplified Practice of the Bureau of Standards to submit it to the manufacturers, distributors, users, and others interested, for consideration and approval.

The simplified list of recommended standard containers covers shapes, capacities, weight per 1000 containers (waxed and unwaxed), the maximum depth of lid seat and maximum bottom recess, also a standard basis weight of paper for different types of lids.

This recommendation will be promulgated by the U. S. Department of Commerce as representing the standard practice of the industry as soon as a sufficient number of those at interest indicate their approval.

# SULPHUR
## and Its Destiny

### Through the Pulp Mill to the Plastic Industry

Many of the plastics start with a cellulose pulp. When it is remembered that the plastics, already important factors, have only scratched the surface in their utility, it is not difficult to visualize what's ahead for the pulp mills in serving this growing industry.

Sulphur feels that it has a modest share in the service pulp mills render the plastic industry.

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75 E. 45th Street New York City
Mines: Newgulf and Long Point, Texas

Photograph of one of the huge vats of Texas Gulf Sulphur from which industry in all parts of the country draws its supply.

Section of the
Technical Association of the Pulp and Paper Industry

Edited by Ronald G. Macdonald, Secretary

# Review Of Paper Industry Literature

**Copies of United States Patents can be obtained from the United State Patent Office, Washington, D. C. for 10 cents each. Send currency, not stamps.**

## Sulphite Process

**Pyrite and Other Sources of Sulphur in Canada.** Carl D. Jentz and Horace Freeman. Pulp Paper Mag. Can. 40; 81-84 (Conv. No., 1939). — The previously described installation (*Pulp Paper Can.* 36; 61-63, 104 (1935)) has been modified in the following respects: (1) the original scrubber tower has been replaced by a two-pass scrubber system consisting essentially of two reinforced concrete towers lined with acid-resisting tile, a cold-water shower system, and a circulating water system which draws water from the common sump joining the bottom of the two towers and showers it into the top of the small tower; (2) the dust settling chamber originally provided between the combustion chamber and the waste heat boiler has been eliminated entirely and the waste heat boiler design rearranged to greatly simplify the entire system; (3) to control temperature and prevent overheating and slagging of the ash in the waste-heat boiler, a fraction of the relatively cool gas leaving the boiler is re-introduced into the furnace, the quantity thus recirculated being controlled by a damper. These changes have lowered operating costs. As now operated, the system produces gas averaging 11 per cent sulphur dioxide, and if necessary the concentration could be raised to approximately 17 per cent.—A.P.-C.

**Problems in the Making of Sulphite Acid Introduced By the Use of Chip Packers.** E. L. Lamb. Paper Trade J. 108, No. 8; 133-136 (Feb. 23, 1939). —It is desirable to use cooking acid of constant, relatively high free sulphur dioxide concentration at all periods of the year, but the warm water used for acid making prevents this in many plants, and this situation is aggravated by the use of chip packers. An analysis of one acid plant which uses milk of lime in Barker towers, showed that changing the tower packing, increasing the combustion chamber volume and cooling the water used for acid making to 10 deg. C. with an evaporative type cooler were the economical moves to insure acid of 6 per cent total sulphur dioxide at all seasons. Experience confirmed this estimate reasonably well. The methods used in making the estimate are described.—A.P.-C.

**The Suitability of Wood for Acid Pulping.** H. Green and F. H. Yorston. Pulp Paper Mag. Can. 40: 244-250 (March, 1939).—Wood which embrittles when treated with sulphurous acid and gives abnormally weak sulphite pulp occurs in small but variable quantities in a large proportion of spruce and balsam logs. This wood is designated as "susceptible wood". Though no definite relationships could be established between the occurrence of susceptible wood and other characteristics of the wood, it was observed that it is very frequently associated with compression wood, it is frequently close to (but not entirely coincident with) regions markedly stained by fungus and it is frequently found distributed as small areas next the pith or in very thin strips on part of the circumference and adjacent to old injuries such as axe-marks or worm holes. Susceptible wood can be imitated by stressing normal wood, but it does not follow that all naturally-occurring susceptible wood is actually due stress. Pulp produced by cooking susceptible wood with sodium sulphide solution is neither weaker nor appreciably shorter-fibered than that from normal wood. No cause for the occurrence of susceptible wood has as yet been found.—A.P.-C.

**Physical Characteristics of Sulphite Pitch.** Robert O. Ragan and Otto Kress. Pulp Paper Mag. Can. 40: 299-301 (April, 1939).—The failure to devize a suitable method of testing pulps for pitch trouble which is wholly reliable is probably due to failure to recognize the importance of the physical properties of the pitch as it exists in the pulp. The physical nature of pitch in pulps which give considerable trouble on the paper machine is undoubtedly different from that in pulps which give only minor difficulties. Tackiness implies a combination of plasticity, adhesion, cohesion and other factors, and plasticity was selected as being the property most easily determined as well as the most revealing. An apparatus and method for determining it has been devized and is described in detail. It is based on the length of time required for a small ball to pull free under a definite stress from a sample of pitch in which it was partly embedded. In order to obtain the pitch from pulp or wood without change in its plasticity, it must be extracted with ethyl acetate and separated from the solvent under very definite conditions which are described in detail. Determinations carried out on pitches extracted from various pulps obtained from a number of mills which experienced widely varying degrees of pitch troubles, showed the time varied inversely as the degree of pitch trouble.—A.P.-C.

**Controls of the Indirect Method of Sulphite**

**Pulping.** A. H. Stanton. Paper Trade J. 108, No. 15: 45-48 (April 13, 1939).—A description of the equipment and procedure used for the time cycle temperature and time cycle pressure and condensate level control as applied to the indirect method of sulfite cooking.—A.P.-C.

**Effect of the Addition of Sodium Salts in Pulping Shortleaf Pine With Neutral Sodium Sulphite Liquor.** G. H. Chidester and J. N. McGovern. Paper Trade J. 108, No. 5: 31-32 (Feb. 9, 1939).—Very strong light-colored, bleachable shortleaf pine pulps were produced by cooking with liquor containing neutral sodium sulphite alone or with the addition of relatively small amounts of sodium bicarbonate, sodium sulphide, or sodium hydroxide to give a pH range from 8 to 11. In general, the results were similar irrespective of the secondary reagent used, the greatest difference noted being the lower bleach requirements of the pulps prepared with the addition of sodium sulphide. This low bleach requirement was apparently obtained at some expense of pulp yield. By way of comparison the same technique was applied to a number of other species, both conifers and hardwoods, and even better pulps were produced than from shortleaf pine.—A.P.-C.

**Recovery of Heat From Sulphur Dioxide Gas.** Anon. Pulp Paper Mag. Can. 40: 302-304 (April, 1939).—A description of the plant installed at St. Lawrence Paper Mills Company, Three-Rivers, Que., for the generation of steam from the heat of the sulphur dioxide gas produced by flash-roasting of pyrites for the production of sulphite acids. —A.P.-C.

**Sulphite Digester Hang-Ups.** William S. Hodgson. Paper Ind. Paper World 20: 955 (Dec., 1938).—A brief discussion of their causes and prevention.—A.P.-C.

# Moisture Expansivity of Paper

By expansivity is meant the capacity to change dimensions. Moisture expansivity is indicated by expansion or contraction with increase or decrease of moisture content, respectively. Practically the same value will be obtained by measuring either contraction or expansion if the conditions are properly controlled. For convenience, the expansivity is determined by measuring contraction.

### Apparatus

The apparatus consists of an airtight cabinet in which changes of length of a specimen of paper are produced by controlled variation of the relative humidity and measured either by means of an optical lever, or by any method of equivalent accuracy. The cabinet is provided with a fan to circulate the air, and is so divided that the air will flow from the fan over a salt solution (*see* Table I) used to control the humidity, then over the test specimen on the return to the man. Using the optical lever the test specimen is mounted vertically between a fixed clamp at the bottom and a loading clamp at the top. A light, flexible cable leads from the loading clamp over a pulley to a suspended weight which applies tension to the specimen. The pulley shaft extends through the back of the cabinet, and a mirror is mounted on the projecting end. This mirror forms a part of the optical lever which indicates the changes of length of the specimen under test. Movement of the mirror through rotation of the shaft changes the position of a spot of light reflected by the mirror to a curved scale graduated in 1/20 inch. The radius of curvature of the scale is the distance of the mirror from the scale. Light from the source, an enclosed 40-w. bulb, is admitted through a ⅛-in. circular aperture with a horizontal cross-hair, and is focused upon the mirror by a 2-in. double-convex lens. The mirror is mounted at an angle to reflect the beam of light upon the scale where the image of the cross-hair forms a reading line. The beam originates from a tube made in two sections, telescoped one within the other, to permit moving the section containing the lens so as to adjust the focus on the mirror to obtain a sharp image on the scale. The sections are 4 inches in length telescoped to form a tube approximately 6 inches long.

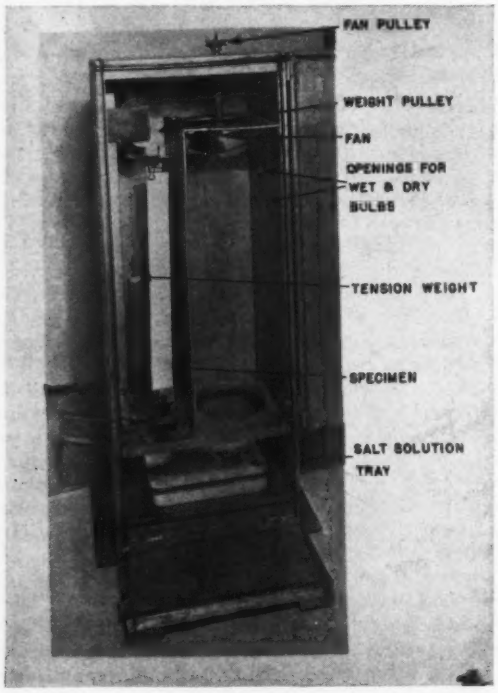


FIG. 1.
View of Open Cabinet with Specimen in Place.

Wet- and dry-bulb thermometers are inserted through the side of the cabinet, just below the fan, for determination of relative humidity. The thermometers should have a range of 0 to 50 deg. C. (32 to 122 deg. F.), be graduated in 0.2 deg. C. (0.5 deg. F.), or less, and should match to within 0.1 deg. C. (¼ deg. F.) throughout the range used.

The pulley shaft is mounted in anti-friction bearings, and the fan arranged to provide an air flow around the specimens of not less than 500 feet per minute. The mirror should be readily adjustable on

the shaft to facilitate making a zero setting. The cabinet must be of sufficient size to permit a testing length of 24 in., and the clamps should have a 2-in. face. If constructed of wood, the cabinet should be coated inside and out with a moisture-resistant coating, and the brackets holding the bottom clamps and the pulley bearings should be mounted on a metal frame which will be unaffected by any expansion or contraction of the wood. If the cabinet is constructed of metal, it should be insulated. The entire front of the cabinet may be hinged to form a door which should be divided at the top of the bottom compartment so that the salt-solution trays may be interchanged without opening the rest of the cabinet.

A cabinet of suitable design is illustrated in Figs. 1 and 2. Its inside dimensions are approximately 40 in. high, 16 in. wide, and 12 in. deep. The light tube is so placed that the lens is approximately 7.5 in. from the mirror. The cross-hair is a copper wire 0.005 in. diam. (no 36 AWG), and the lens is from an ordinary hand reading glass, having a focal length of 4.9 in. (8.00 diopters).

If the apparatus is constructed for testing two or more specimens simultaneously, care must be taken that the specimens are parallel to permit uniform flow of air over them.

### Calibration

The tension on a test specimen is equal to the difference between the total load applied to the test specimen, and the load required to move the upper jaw. Hence, the latter should be checked at intervals of not more than 30 days. To do so, reduce the weight to the point where the upper jaw, without test specimen, is balanced; then add weight very slowly until the jaw moves. This may be done conveniently by adding weight in the form of small shot.

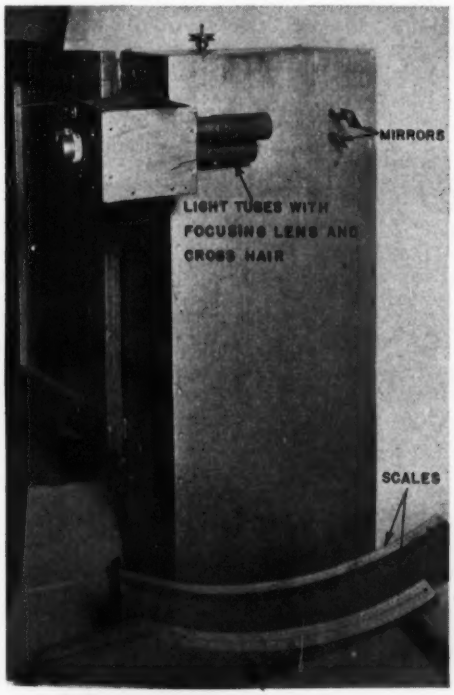


FIG. 2.
**Back of Cabinet Showing Optical Lever**

To check for accuracy of the scale readings, calculate the value of the scale division, using the ratio of the radius of the pulley plus half the thickness of the band around the pulley, to the distance of the mirror from the scale. Alternatively, compare the scale readings with measured travels of the upper jaw. Place a metal tape in the same position as a test specimen. Raise or lower the lower jaw and measure its movement with a micrometer caliper. Compare the actual movement with the scale reading.

### Test Specimen

Cut the specimens for test, whenever possible, 2 in. wide and 25 in. long; and with the long dimension parallel to the major direction for which data are required. If it is necessary to use smaller specimens, their dimensions and the testing length shall be stated in the report. The specimens shall be cut with the edges clean and parallel.

### Procedure

Clamp the specimen firmly in place, with the distance between clamps (testing length) 24 in. and under a tension of 50 g. per in. of width. Condition it first at a relative humidity of approximately 50 per cent or lower, than at approximately 80 per cent or above. When the length becomes constant at the higher humidity, adjust the position to the mirror to give a zero setting. Obtain data for an expansion curve by conditioning to constant length at two or more successively lower humidities to 50 per cent or lower. Make humidity determinations and scale readings for each condition. Plot the changes in length against relative humidity and, from the curve, determine the decrease in length with change from 65 per cent relative humidity to 50 per cent relative humidity. Data on one specimen are sufficient for an ordinary test but if a smooth curve is not obtained, make a check test. During the test the reading of the dry-bulb thermometer shall not be less than 18 deg. C. (64.4 deg. F.) nor more than 24 deg. C. (75.2 deg. F.).

### Precision

The reproducibility of the test results is within 2 per cent.

### Report

Report the expansivity as the percentage change of length for a decrease from 65 per cent relative humidity to 50 per cent relative humidity. The report shall also state whether the expansivity is in the machine direction or in the cross direction of the paper. If it is necessary to use a smaller test specimen than that specified, its dimensions shall be stated.

### References

Weber, C. G., and Geib, M. N. V., "New Test for Dimensional Changes in Offset Papers," National Bur. Standards *Jour. of Research 19*, No. 6 (Dec., 1937), *Research Paper* RP1054.

Van den Akker, J. A., "The Neenah Expansimeter," *Paper Trade J.*, 109 No. 22:105 (Nov. 30, 1939).

### Additional Information

TABLE I.—SUBSTANCES SUGGESTED FOR CONTROL OF HUMIDITY

| Substance | Ascribed Relative Humidity per cent |
|---|---|
| Potassium sulphate (saturated solution) | 95 |
| Barium chloride (saturated solution) | 88 |
| Sodium chloride (saturated solution) | 75.8 |
| Sodium bromide (saturated solution) | 58 |
| Sodium dichromate (saturated solution) | 52 |
| Potassium carbonate (saturated solution) | 43 |
| Magnesium chloride (crystals) | 33 |
| Calcium chloride (solid), less than | 5 |

# Microbiology of Pulp and White Water Systems*

By H. K. Nason[1], R. S. Shumard[1], and John D. Fleming[1]

**Abstract**

*Pulp and paper systems, from grinder or digester to finished lap or sheet, furnish a fertile field for microbiological activity, which, unlike the microbiological activities in the processes of some of the food and beverage industries, serves no useful purpose. Quite to the contrary, however, such activity gives rise to a number of disagreeable operating difficulties and serious economic problems, such as slime, degrading of stored pulp lap, fermentation and putrefaction of stock in process, rotting of felts, as well as the bacterial contamination and mildewing of the finished products. That such activity occurs and that it may cause serious economic difficulties is well known to most operators.*

*This paper reviews the causes of microbiological activity in pulp and paper systems and discusses the types of micro-organisms involved. Preventive methods are outlined; sodium pentachlorophenate, one of the newer synthetic organic germicides is discussed.*

## Factors That Influence Growth of Micro-organisms

The growth of micro-organism in any environment is influenced by a number of factors, among which the following are generally considered most important:

### Food Supply

For abundant growth of any micro-organism, there must be present a supply of food materials in a form which can be readily utilized by that organism.

### Moisture

All micro-organisms require high concentrations of moisture. Individual organisms have different preferences in this respect, and the form and concentration of moisture present in any particular situation may be the chief factor in determining the type of microbiological growth which occurs.

### Air Tension

Some organisms require air (oxygen) and will not live without it; these are called "aerobic" organisms. Others will live in the absence of air but thrive much better when it is present; these are known as "facultative aerobic" organisms. A third type will live in the presence of air but grow best when air is absent; these are known as "facultative anaerobes". Still a fourth class is a group of organisms which can live only when air is rigidly excluded; these are known as "strict anaerobes". All forms of life require oxygen for vital processes. Anaerobic organisms, however, obtain their necessary oxygen from oxygen compounds in their food-stuffs and are "poisoned" by gaseous oxygen. The air tension in any particular system is an important factor in determining the type of microbiological growth.

### Temperature

In general, micro-organisms thrive best when their environment is at a temperature between 20 and 40 deg. C. Here, again, there are considerable individual differences, some organisms growing at lower temperatures, others at higher. Prolonged exposure to temperatures above 60 deg. C. will kill many organisms (the process of pasteurization is based on this fact); a group of bacteria known as the thermophiles is an exception, distinguished by the ability to live and even to grow at temperatures appreciably above those at which ordinary organisms are killed.

### Inoculation

Since living organisms are produced only from other living organisms of the same type, the presence of viable micro-organisms in a system is an essential factor for the growth of micro-organisms in that system. The system must be "inoculated" in some way with living organisms.

### Chemical Environment

A favorable chemical environment is necessary for the growth of organisms. Toxic substances must be absent; nutritive and growth accessory substances must be present and in sufficient quantity. The reaction (*p*H) of the medium also influences the type of growth.

### Light

In some cases, light is necessary for growth, but most of the micro-organisms occurring in pulp and paper systems thrive in the absence of light. Certain types of light (such as the ultraviolet rays) are lethal to bacteria and other micro-organisms.

These seven factors are very important to and profoundly influence the microbiology of pulp and white water systems. They must be considered in any analysis of such systems. A detailed discussion of the influence of each factor will aid in clarifying this point.

## Discussion of These Influencing Factors

### Food

All pulp and white water systems contain an abundance of food in a form readily available to micro-organisms. Small amounts in the form of mineral salts and soluble organic substances, may be furnished by the water supply. By far the largest amounts, however, are furnished by the stock. Thus, wood pulp furnishes large amounts of water-soluble substances, such as mineral salts, sugars, extractives, etc., starches and similar colloidal substances, and cellulose. The first two of these groups are rich sources of food for most micro-organisms, and even cellulose can be broken down and utilized by some bacteria and fungi.

It is true that the relative types and amounts of food substances may vary greatly from one paper-making system to another. Groundwood systems are generally richest in these materials. Strawboard systems also contain a very plentiful supply. Sulphite or rag stock systems may be relatively poor in such food materials but nearly always contain enough to permit bacterial growth.

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### Moisture

Moisture relationships influence the type of growth, and may be chiefly responsible for the differences in microbiological flora at different points in the system.

For example, bacterial growth is most abundant where an excess of liquid water is present, and bacterial slime is most abundant in those parts of the system which are completely submerged or nearly so. Fungi, in general, can not grow when completely submerged.

Fungi, on the other hand, prefer locations which are moist, but not excessively wet. Fungi grow well on equipment just above the water line, on stored lap pulp, etc. Paper will support fungal growth when its moisture content is 25 per cent or higher but not when completely submerged. Where little or no water is present, micro-organism growth does not occur.

### Air and Temperature

Air is usually present in pulp and paper systems, and most of the organisms responsible for paper mill difficulties are aerobic.

White water systems are nearly always maintained at temperatures which are very favorable for the growth of micro-organisms. Temperature conditions in warehouses where lap pulp is stored are also favorable, particularly for fungal growth. Low winter temperatures may restrict growth somewhat during part of the storage season.

### Inoculation

Every pulp and paper system is amply inoculated. The contaminating organisms come in with the stock and water used. The air and all equipment, as well as size and other added materials, furnish further contamination at various points throughout the process.

It is interesting to note here that some slime-prevention methods have as their prime objective the removal or elimination of sources of contamination. This applies to chlorination of the raw water used and to periodic cleaning of the paper machine and accessory equipment.

### Chemical Environment

Environmental conditions are favorable to the growth of micro-organisms in most pulp and paper systems due to the abundance of food substances, but they may be so modified by the addition of toxic chemicals that all growth is prevented. The addition of chlorine and ammonia, or other antiseptics, to white water is made with this object in mind.

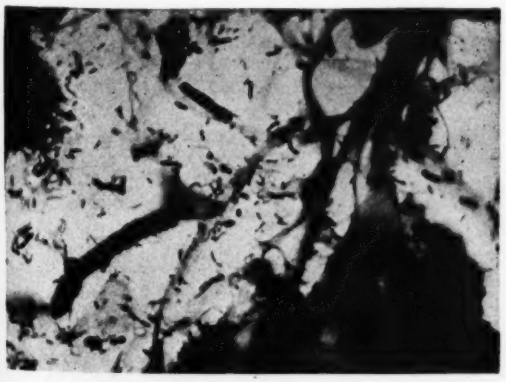


Fig. 1.
Slime from an Ontario Sulphite Mill. Magnification about 1100×.

In some cases the micro-organisms may modify their own environment in such a way that it becomes toxic to them, but this usually does not occur until very heavy growth has taken place. Some slime bacteria produce large quantities of acids which, if allowed to accumulate, will destroy the organisms which formed them, and other waste products of bacterial metabolism act in a similar way.

The chemical environment may also profoundly influence the type of growth present. Thus, bacteria generally prefer media whose *p*H is within the range 6.5 to 8.0. Fungi, while usually growing most luxuriantly at or near this neutral range, can grow at much higher acidities and may be found on materials whose *p*H is as low as 2.0 or even lower.

### Light

As stated above, light is comparatively unimportant in paper mill systems. Only the algae, of all the organisms present, require light and they are rarely present in these systems.

Some attempts have been made to utilize ultraviolet rays for the sterilization of finished paper, but these have met with little success.

## Slime

Slime is a gelatinous mass which may form at any point in the slush pulp or white water system. It usually occurs below the water level but "spatter" slime, which forms at or above the water line, is not uncommon.

Under favorable conditions, large quantities of slime may form in a relatively short time. These deposits, upon aging, come loose from their place of attachment and are carried onto the machine with the fibers. Under such conditions, slime may cause holes in the finished sheet, improper texture, disagreeable odors, off-colors, improper sizing, clogging of wires, breaks, improper drying, felt damage and actual stock loss. Slime accumulates rapidly in a closed white water system and may prevent the realization of economies of which such systems are potentially capable.

Slime is caused, in nearly every case, by micro-organisms, and large numbers of these may usually be found by microscopic examination of a slime deposit. Fibers and miscellaneous debris, organic and inorganic, may also usually be found, but their role is secondary. The micro-organisms confer the slimy, gelatinous nature and provide the cementing and adhesive material; fibers and debris add to the bulk, and, to some extent, furnish food substances. Quantatitive cultural methods demonstrate the presence of enormous numbers of bacteria in slime deposits; as many as 2-½ billion per gram have thus been demonstrated. White waters also may have bacterial counts nearly as high.

Figure 1 is a photomicrograph of slime from an Ontario sulphite mill. The magnification is about 1100 X and the object has been treated with an aniline dye to differentiate the various objects more clearly. In this picture may be seen bacteria, fibers, and the gelatinous matrix in which all are embedded. This picture is typical of what one sees in microscopic examination of slime deposits.

There are a great many different kinds of micro-organisms, including bacteria, fungi, yeasts, algae, and protozoa, which may be encountered in slime deposits. The composition of such deposits varies

widely from mill to mill and even from place to place in the same mill. Generally, however, bacteria are the most important single group of slime-forming organisms. Fungi, while frequently of importance in spatter slime, are but occasionally encountered in submerged slime and usually are relatively unimportant, since they do not ordinarily grow well when completely submerged.

Yeasts are occasionally found but are rarely present in sufficient quantities to be of causative significance. Algae are sometimes encountered and may under some conditions be important, but usually they cause little trouble, since they do not thrive in the absence of light. Protozoa are frequently found, particularly in strawboard white waters, but their presence is fortuitous; they play little or no part in slime formation. The nature of slime deposits has been discussed in greater detail by others *(1* to *7)*.

Probably the most important of the slime-forming bacteria are the capsulated bacilli. These occur as small rod-shaped organisms which are surrounded by a heavy, gelatinous, slimy coating or capsule. This capsule, which is usually pectinaceous in nature, swells in water to produce a heavy, viscid mass. These organisms utilize sugars in their metabolism and produce acids as waste products. Some have been reported to have the ability to digest and utilize cellulose, but this point is disputed.

Figure 2 is a photomicrograph of a slime deposit from an Indiana straw-board mill. This was prepared to emphasize the capsules by smearing a mixture of slime and india ink on a slide and counterstaining with an aniline dye. This procedure dyes the bacillus but leaves the capsule as a clear unstained envelope visible against a background of india ink. The magnification is about 1700 X. From this slime, typical, capsulated rods were isolated in pure culture.

Bacteria belonging to several different genera will produce the above effects, but the *Aerobacter* group is one of the most frequently encountered. Typical members which are often found in both slime and white-water are *Aerobacter aerogenes* and *Aerobacter cloacae*. Beckwith (loc. cit.) claims that *Aerobacter*

FIG. 2.
**Slime-Forming Bacteria of the Capsulated Bacilli Type. Magnification about 1700×.**

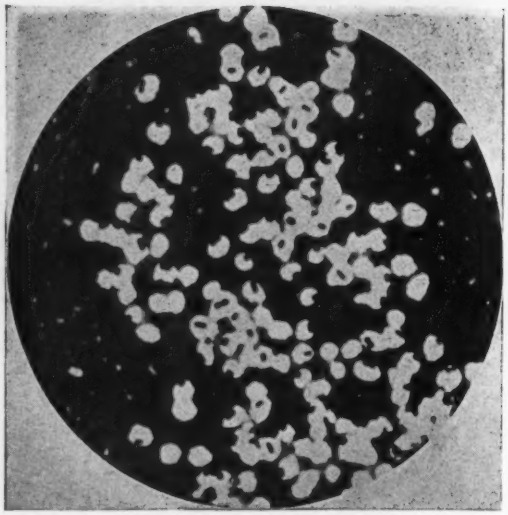


FIG. 3.
**Aerobacter Aerogenes from a Wisconsin Groundwood Mill. Magnification about 1700×.**

*aerogenes* is the most commonly occurring slime-forming organism and is chiefly responsible for most slime deposits. He was able to reproduce typical slime deposits in the laboratory using pure cultures of this organism and a cellulose medium.

Figure 3 is a photomicrograph of *Aerobacter aerogenes* (india ink preparation) isolated from slime from a Wisconsin groundwood mill. The heavy capsule is quite evident. These organisms produced large quantities of acid on carbohydrate media, and fermented dextrose and sucrose with the formation of acid and gas. Lactose was sometimes fermented, at other times not. Starch and cellulose were not fermented by any of the strains isolated by us nor was gelatin liquefied. The methyl red test was negative and the Voges-Praskauer reaction was positive.

Members of the *Aerobacter* group are common in water and soil, and can nearly always be isolated from the mill water supply. Hence their inoculation into the paper making system is almost a certainty and, if a favorable environment is present, they will grow and form slime. These organisms have been isolated from slime, white water, and lap pulp from nearly every section of the United States and from Canada, Ireland, Finland, and Sweden.

A group of organisms which is frequently isolated from pulp and white water systems belongs to the genus *Escherichia*. The most common member of this group is *Escherichia coli*, the organism used as an indicator of sewage pollution in water supplies. It is found in the intestinal tracts of man and animals and is present in most surface water sources. The *Escherichia* are quite similar to the *aerobacter* in many respects and can form slime deposits of a similar type. Usually, however, *Escherichia* will not form as slimy a deposit, since their capsulation is comparatively light.

An important genus is *Cellulomonas*. These organisms are very small but produce abundant slime and have the ability to digest cellulose.

*Chromobacter* is another important genus. An india ink preparation of *Chromobacter viscosum*, isolated from white water at an Illinois strawboard mill,

is shown in Fig. 4. This organism also can produce abundant slime.

Members of the *Flavobacterium* group have been isolated from several sources. These organisms form small capsules but produce a slime which is very stringy and ropy. A yellow pigment is also formed.

*Achromobacter* is another important group of capsulated slime-formers. A number of noncapsulated rod-shaped bacteria, mostly belonging to the genus *Bacillus,* have been isolated from various sources. *Bacillus subtilis,* the common hay bacillus, is frequently encountered. The relationship of these organisms to slime formation is uncertain. It is probable that they could cause slime if present in sufficiently large numbers, but, in general, they are subordinate in importance to the capsulated forms.

In addition to the rod-shaped bacteria, the cocci or ball-shaped forms are sometimes encountered and may be of importance in some cases. Some members of the genus *Micrococcus* have been isolated from slime deposits and at least one of these has produced capsules when grown on nitrogenous media.

The iron bacteria constitute another important class of organisms which may be present in slime. These are generally filamentous bacteria which secrete iron oxide, or hydroxide in their sheath. They may produce masses of gelatinous slime and are frequently the cause of brown rust spots in finished paper. Figure 5 is a photomicrograph (1700 X) of *Crenothrix,* iron bacterium.

A similar group of organisms is the sulphur bacteria. These deposit sulphur granules within the cell. A typical specimen, isolated from an Indiana strawboard mill, is shown in Fig. 6. These are generally not of much importance but sulphur bacteria are especially apt to cause offensive odors and, in this way, contribute to the nuisance of slime.

Various investigators *(1, 5)* have reported the isolation of a large variety of fungi from slime deposits and under some conditions these organisms may predominate. Some fungi produce gelatinous substances similar to the capsular material of bacteria; usually, however, they form a tangled mass of filaments within which is trapped bacteria, fibers, and debris. Figure 7 is a photomicrograph (100 X) of a fungus which was the cause of a rather extensive slime deposit.

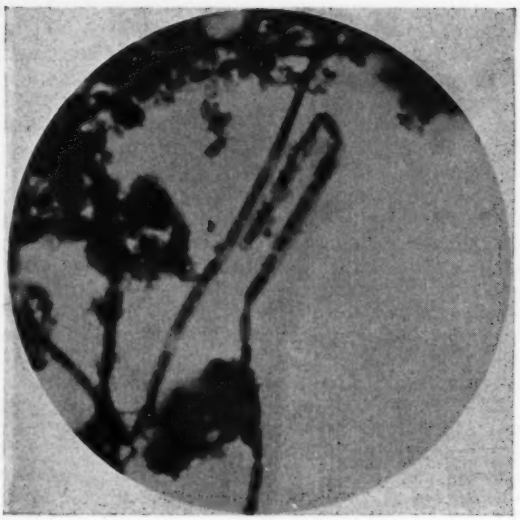


FIG. 5.
**Crenothrix, Iron Bacterium. Magnification about 1700×.**

Relatively few yeasts have been implicated as causative agents for slime deposits, but some forms, especially those resembling capsulated bacteria, are contributing, if not primary, causes in some cases.

Algae have been isolated occasionally from slimes, but in most cases their presence seems to be without causative significance. Algae do cause extensive slimy deposits in cooling water systems and may in some cases be of importance to paper mill operators. Figure 8 is a picture of a filamentous algae.

Protozoa, as pointed out above, are not important organisms from the standpoint of slime formation.

### Micro-organisms in Stored Pulp

Chemical or mechanical pulp is frequently stored damp for long periods of time and under the usual

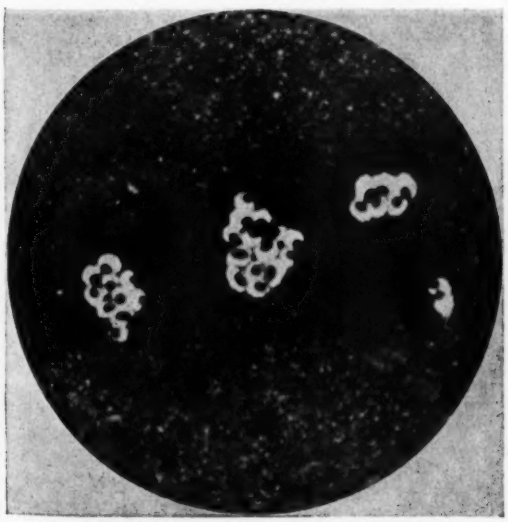


FIG. 4.
**Chromobacter Viscosum. Magnification about 1700×.**

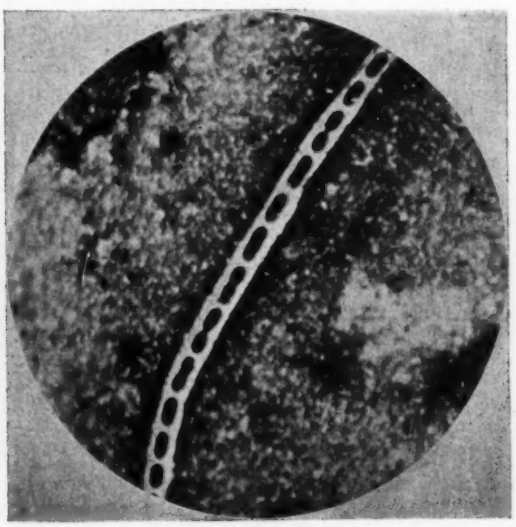


FIG. 6.
**Sulphur Bacteria. Magnification about 1700×.**

storage conditions considerable damage is suffered from the attack of micro-organisms.

Bacteria usually do not thrive on this stored pulp because of its relatively low moisture content, but fungi find these conditions ideal and grow vigorously. Bacteria, when present, are generally found in the lower sections of the piles, where moisture is most abundant.

Three general types of bacteria have been isolated from stored pulp. The first of these causes rotting and general disintegration of the fiber substance and may under extreme conditions cause serious loss of paper making material. Organisms causing this type of damage usually belong to the *cellulomonas* group or to the heavily capsulated bacilli producing much acid when growing on carbohydrate media. Their isolation in pure culture is difficult.

The second class of bacteria affecting stored pulp comprises those that form slime. These organisms are the same ones that cause slime in white water systems and which are discussed above. The slime formed on the pulp laps may cause trouble during subsequent conversion of the pulp into paper, but usually this is not the case.

The third class of bacteria is that which causes staining of the stored pulp. *Serratia* is one example. These stains ordinarily wash out in the beater and cause little or no trouble in the finished sheet.

Although in general, damage to stored pulp by the action of bacteria is slight, fungi, which grow under conditions of moisture, temperature, and acidity detrimental to bacteria, cause serious damage. This subject has been investigated extensively both here and abroad, and a large number of causative organisms have been described *(9 to 13)*. These fungi may be divided into three groups: those which cause rotting, those which cause staining, and those which cause speck formation.

Rotting fungi are quite common, and under extreme storage conditions may cause extensive losses in weight or tender the fibers so that they break up in the beater and are lost in the white water. According to Kress and his co-workers *(11)*; the organisms chiefly responsible for this rotting are *Hymenomycetes;* this group includes most of the common wood-

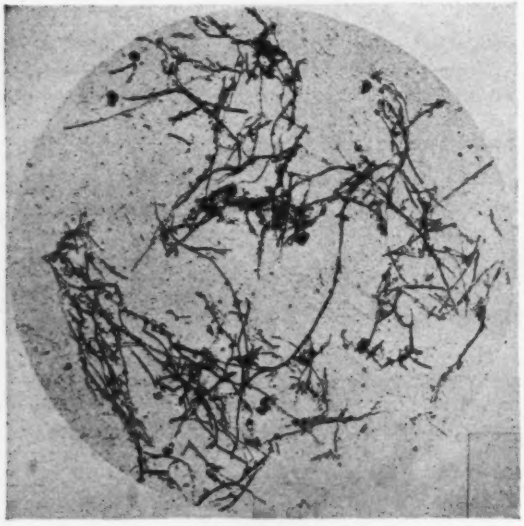


FIG. 7.
**Fungus. Magnification about 100×.**

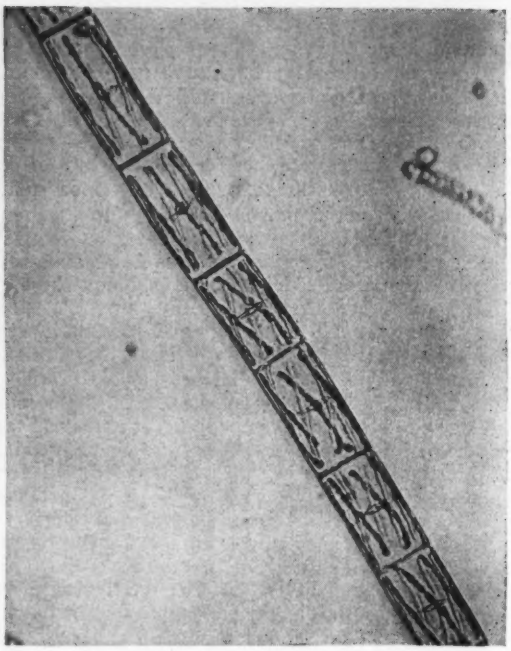


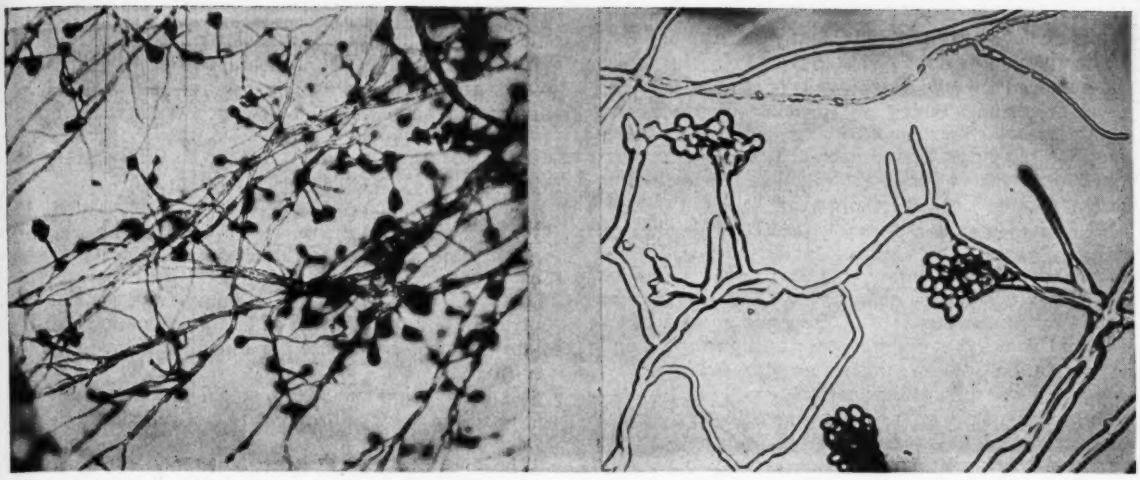
FIG. 8.
**Spirozyra, Filamentous Algae.**

destroying fungi, and the action upon pulp and wood is much the same. Molds may cause some rotting but in general do not. Kress, et al., list a large number of organisms isolated from stored pulp and classify them according to their effect on that pulp.

Staining fungi are of two types: 1) those which affect the finished paper, producing off-colors, and 2) those which wash out in the beater and do not affect the finished sheet. Naturally, the action of the first type is the more serious. The organisms causing this type of damage in many cases are similar to or identical with those causing "blue" stain in freshly sawed timber. According to Rennerfelt *(12)* the prediminating ones are *Cadophora fastigiata, Pullularia pullulans, Ophiostoma piciae* and *Oidiodendron. Torulopsidaceae* is one of the most troublesome families. Many other types are listed by the other workers on the subject and nearly all of these can be demonstrated to be of importance under one condition or another. It is interesting to note that most of the fungi reported to be important in Norway, Sweden, and Finland have also been found on damaged pulp in this country or in Canada.

There are a great variety of fungi which produce stains but which wash out in the beater and do not affect the finished sheet. Most of the common molds, such as *Aspergillus niger* and the *Penicillia,* are of this type. Figure 9 shows photo-micrographs of a *Haplographium,* isolated from Wisconsin groundwood pulp. This organism produced a heavy black, sooty growth on the surface of the pulp lap, but was completely removed in the beaters.

Fungi of the third class mentioned above are very troublesome. These organisms produce hard, brown or black specks which extend through the pulp lap; these specks do not break up in the beater, but carry through the system and produce defects in the finished sheet. This can be prevented only by rescreening all of the infected pulp, an expensive operation. Figure 10 shows photomicrographs of *Cadophora*



a b

FIG. 9.
Haplographium, A Fungus Isolated from Groundwood Pulp. Magnification about (a) 150× and (b) 675×.

*richardsiae,* isolated from specked Wisconsin groundwood pulp. Other organisms are known which produce this same effect.

### Bactericides and Preventive Remedies

In a recent survey of Canadian mills among which were newsprint, board, fine paper, and pulp, and reported by W. A. Ketchen *(14),* it was determined that only two mills had found it unnecessary to give any consideration to the slime problem. Troublesome slime had required attention of some kind by all of the others, the seriousness of the condition varying with the mill as well as the seasons of the year.

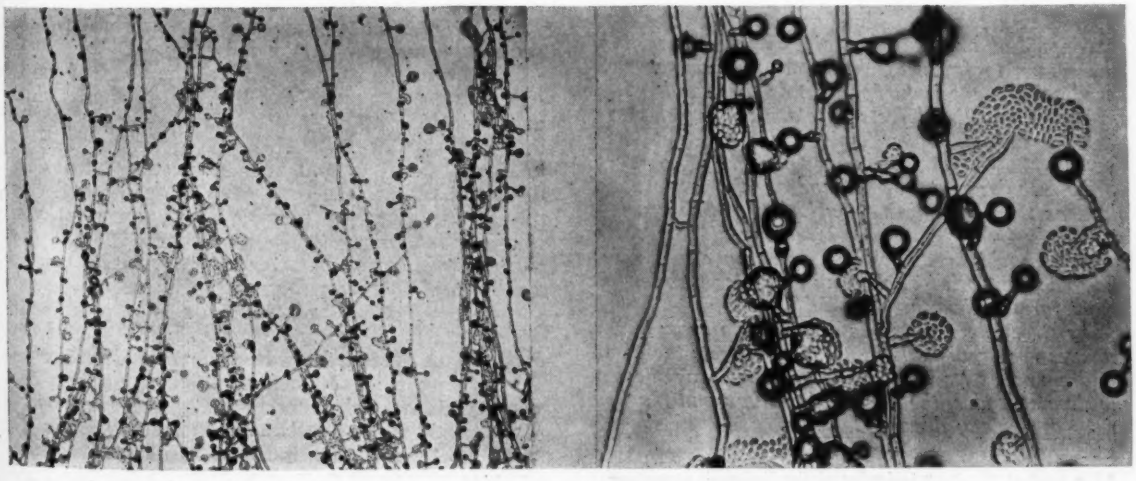
Ketchen has estimated on the basis of this survey that, by reason of stock losses, culled paper, cleanups, lost production rewinds, and press delays at the printers, the cost of slime to the industry is about 13c per ton of paper produced.

It is the general practice to combat slime by regular cleanups at semiannual, monthly, semimonthly, or weekly period depending on the seriousness of the condition. Many mills supplement weekly washup measures with continuous antislime treatments.

Slime formation in pulp and paper systems is prevented or greatly reduced in many mills by the application of chlorine or chlorine with ammonia to the fresh water supply, the shower water or the white water, and sometimes by treatment at all of these places. The average chlorine dosage used varies from 0.6 to 1.0 pound per ton of product.

Chlorine is a highly effective bactericide (and a somewhat less effective fungicide), but its usefulness is limited. Its extreme reactivity with organic matter causes the toxic chemical to become spent quickly. The use of ammonia with chlorine in ratios of from one part of ammonia with five of chlorine to one part of ammonia with ten parts of chlorine reduces the oxidation potential of the chlorine and thus prolongs the interval of toxic efficacy. However, satisfactory control of slime by the use of chlorine is found difficult under some conditions even with the aid given by ammonia.

Copper sulphate, zinc sulphate, acids, caustic alkalies, combinations of chlorine with copper sulphate, and chlorine with ammonia and copper sul-



a b

FIG. 10.
Cadophora Richardsiae, Isolated from Wisconsin Groundwood Pulp. Magnification about (a) 150× and (b) 675×.

phate are sometimes used to combat slime but the results achieved are not consistently satisfactory.

The development of synthetic organic fungicides has provided new and economical materials in the polychlorophenols which are proving very effective agents for both the control of slime and the preservation of stored pulps. Sodium pentachlorophenate is believed to be one of the most suitable and effective of these agents now commercially available.

Sodium pentachlorophenate, unlike chlorine, is relatively unreactive chemically and, therefore, is not quickly spent by the organic matter present. Used for the control of slime, some mills have found it may be applied by continuous feed at the grinders in dosages of from 0.1 to 0.6 pound per ton of pulp ground, and the inhibition of organism growth will persist throughout the pulp and paper systems.

The rotting, staining, and specking of both chemical and mechanical pulps during damp storage can be prevented by the incorporation of from two to four pounds of sodium pentachlorophenate per ton of pulp (moisture-free basis). This may be accomplished by spraying a solution of the chemical on the lap as it is being formed on the wet machine.

Many other useful applications for sodium pentachlorophenate are being found in the pulp and paper industry, not only by reason of its high degree of toxicity to a wide range of trouble-making organisms, but also because the physical and chemical properties of the material, such as stability, noncorrosiveness, low vapor pressure, freedom from odor, et cetera, make it particularly well suited to the processes of manufacture and the requirements of the finished product.

Reduction of bacterial count and mildewproofing of paper and boxboard can be obtained by incorporation of sodium pentachlorophenate into the stock in the beaters. Insoluble pentachlorophenol, precipitated on the fiber by the action of alum or other acidic elements on the water soluble sodium salt, is retained in the finished sheet. The concentrations required for these purposes depend upon the characteristics of the stock and range from 0.06 to 0.5 per cent of the weight of the moisture-free fiber.

Sodium pentachlorophenate is also being used to preserve felts against biological rotting by rinsing with a weak solution of the chemical before shutting down. Stocks in process and held over during the shut-down period may be prevented from souring or putrefying by the addition of about five pounds of sodium pentachlorophenate per ton of moisture-free fiber present.

Manufacturing and technological experience to date with sodium pentachlorophenate, as well as published toxicological data, show that sodium pentachlorophenate is no more toxic to man than many other chemicals in common industrial use today.

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# The Stream Flow Vat System*

By Philip H. Goldsmith[1]


### Abstract

*The present demand for improved cylinder forming parts is ascribed to the wide need for cylinder products and the importance of formation in the papermaking process. Moldhead and vat circle flow are described as the two main operating variables. The return to favor of the direct flow vat as compared with the counterflow vat is discussed. It is explained how the defects of older vat systems prevent the use of proper mold heads and vat circle flows.*

*The requirements of a modern vat system are given as thorough mixing, exclusion and removal of air, steady feed of vat, even spreading of flow, wider range of mold heads without affecting circle flows, and wide control of circle flow velocities through the whole forming length.*

*The streamflow system is described to show how it removes the previous limitations and meets the above requirements. Its component parts such as the vat, the flow spreader, the up-flow head box and the flow mixer are briefly described.*


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There were 669 cylinder machines in the United States in 1936 out of a total of 1533 paper machines according to the U. S. Dept. of Commerce (*1*). The daily capacity for cylinder machines for the same year is given as 21,517 tons out of a total of 46,639 tons. Cylinder machines represent nearly half the productive capacity of the industry.

The formation of the fiber into the sheet of paper has perhaps a more direct bearing on the product and, therefore, on the profits than any other step in the papermaking process. Each preceding step is directed toward it and each succeeding step only dries and finishes the product. The quality and cost of a sheet of paper depend largely on what you can form and how well you can form it. It is not surprising, therefore, that cylinder formation is constantly gaining more interest and attention.

Formation of a sheet of paper is a process of drainage. The fourdrinier is the logical step from the hand mold and depends on gravity drainage on the forming table. It is a continuous machine developed to accomplish mechanically the same operations as those previously used in making paper by hand. The cylinder machine has as its basis a quite different principle, that of picking up the fibers by means of drainage under head.

The fourdrinier is primarily limited to a single

ply. The cylinder, because of its use of drainage head, is more compact for a given amount of drainage. It lends itself to a multiplicity of units and allows greater tonnage for a given width. It allows the formation of heavier sheets of relatively slow stocks and thus became the usual machine for heavier grades requiring qualities of stiffness, bursting strength, etc. such as paper boards. Waste materials can be incorporated in inner plies. The more grainy nature of a cylinder sheet is preferred for some products.

Factors such as the rapid growth of the newsprint industry forced a quickened development of the fourdrinier part. Other major trends are now exerting powerful pressure to develop the latent possibilities of the cylinder machine. For instance, in the south today, a test liner sheet, made entirely from virgin pulp, is competing successfully with a northern jute sheet made to a great extent from waste materials. Largely responsible for this paradox is the competitive disadvantage of the cylinder machine compared to the fourdrinier as regards speed and bulk. This is one specific example of the present demand for the redesign of our cylinder wet ends along more modern lines.

## Two Main Operating Variables

On any given cylinder machine there are only two main factors of formation under the control of the machine tender. The amount of mold head is one of these factors; the other is the relation between mold speed and stock flow around the forming length. The degree to which these factors can be controlled in actual operation limits the quality of the formation, the range of stock freenesses which can be formed, and the changes in crossing, etc. which can be produced at will. If, as is mostly the case, these factors cannot really be controlled, then the stock must be furnished and prepared just to form acceptably, rather than for the sheet characteristics desired. This often means expensive furnish to meet specifications.

### Mold Head

The fibers deposited on the mold offer a resistance to flow which forces the level outside the mold to rise until enough head is created to maintain the flow. A trash screen in a water channel acts in exactly the same manner.

In practice, the level inside the mold is generally established by the position of the spill gates over which the excess white water leaves the system. The quantity of drainage water (usually controlled by the vat pump valve) is adjusted to bring the liquid outside the mold to the desired level. When the spill gates are lowered the valve must be opened a corresponding amount or *vice versa*. For practical purposes, the mold head may be taken to vary as the square of the quantity drained (*2*). This is the fundamental relation between mold head and forming consistency.

If more stock is turned on the spill gates must be lowered or the valve opening decreased. The mold head must be varied about in direct proportion to the sheet weight (*2*), if the valve is left unchanged.

The freer the stock, the more mold head is needed to prevent slipping. When no more mold head is possible and the sheet still slips, then usually nothing can be done except to set up the jordan. The amount of mold head which can be used limits the freeness of stock that can be formed successfully.

Increased mold head means increased flow. Therefore, insufficient pump capacity or a "wild" vat can limit the mold head available just as much as insufficient white water passages or spill gates which cannot be lowered sufficiently. Where the vat circle is fixed, undesirable velocity conditions around the mold can also limit the mold head as will be discussed below.

### Vat Circle Flow

The mold head determines the rush with which fibers are pulled to the mold face. The other force acting on the fibers during their arrangement into a sheet structure is the direction and velocity of stock flow with relation to the motion of the mold surface. It has long been known that a moderate difference in speeds between stock flow and mold will produce a better closed sheet than to have the mold rush through the fiber suspension with a high relative speed. It has also been rather generally known that considerable crossing of the fibers can be effected by making the stock flow substantially equal to the mold speed, so that there is very little or no relative motion. These effects have been recently investigated in many mills making a variety of products. The practical use of this principle requires a smooth flow. A wild vat will produce streaking before you can do much.

To obtain the optimum results, both as to look-through and crossing it is also necessary to be able to establish the most desirable velocity relationships all around the mold, because formation continues at a decreasing rate through the whole submerged length. If changes in mold head produce changes in stock velocity, as they do in fixed circle vats, these two variables are "locked together" and each then limits the other.

## Previous Practice

### Types of Vats

Since early days two types of vats have been in most general use. The over- or direct-flow type flows the stock in the same direction as the mold travel and has a stock overflow on the upturning side. The counterflow vat feeds the stock counter to the direction of mold travel and needs no stock overflow.

Many variations have been tried, e.g., counterflow vats with stock overflow have been employed to form a very grainy heavy weight sheet at slow speed, such as heavy roofing felt. For building up cross strength, cross-current vats feeding axially to the mold were resorted to. Each type had its inception in an attempt to make the velocity conditions during formation as suitable as possible for one particular product.

The direct flow vat has persisted, where quality formation is desired. By reducing the speed difference between mold and stock flow, it produces a better formed sheet, especially with relatively free stock. It also makes the grain less pronounced. Under normal operating conditions, it must have a stock overflow, or it will act as a thickener and run dry. It does not respond to wing boards for correcting weight variations across the sheet. Contrary to general belief, it will form a superior heavy weight sheet at slow speed, but to do this it must have wide circle distances to reduce the flow velocity correspondingly. More narrow circle distances yield the best light weight, faster running sheet. Insufficient attention was usually given to the basic factors mak-

ing for a "level" sheet, especially the approach flow.

The counterflow vat requires no stock overflow, because the thickening effect is counteracted by the incoming stock. Somewhat less flow is handled and it responds to wing boards. Its need for a good approach is important, but is not so evident. It does not seem as sensitive to stock and speed changes as far as the circle clearances are concerned. This type of vat until recently was the standard one for production grades of paperboard, such as, chip, boxboards, and container boards. The sheet is, however, extremely grainy especially at higher speeds, and no control over formation is possible except by mold head and stock preparation.

As machine speeds were pushed upward a conviction spread that the counterflow vat had reached the limit of its possibilities. A radical departure was necessary to permit better forming conditions in the vat at higher speeds. The possibilities of the direct-flow type were well known but its limitations had to be removed to make the machine equally suitable for heavyweight and lightweight sheets. The first logical solution appeared to be a reversible vat, i.e., one which would operate counterflow for heavyweights and direct flow for lightweights. In the meantime, however, mill operation was rapidly accumulating proof that very superior formation of heavyweight sheets as well as of lightweight sheets could be obtained by direct flow vats, but that different circle distances were required for each purpose.

### Defects of Old Vat Systems

When a machine must be slowed down to obtain good formation, or when the stock must be made slower just to form properly (possibly with a "sweetening" of furnish to keep up to specifications for folding, etc.), we know that we are up against forming limitations. Let us assume sufficient forming surface to insure a proper consistency for the kind and quantity of product being made. What limitations does one usually find in the use of the operating variables of mold head and vat circle flow?

When more mold head is needed to avoid making the stock slower, a number of obstacles can prevent you from getting it. The spill gate chambers in the vat ends may have been designed for the convenience of the foundry and not of the papermaker and may not be deep enough. The operation of the spill gates may be so difficult (as with the old "sticks") that their adjustment is impractical. The openings from the mold into the vat ends may be too small, so that the level inside the mold does not change when the spill gates are moved. If the pump capacity is too small you may be able to get suitable mold head only by wasting large quantities of white water and by using prohibitive amounts of new water. If the vat gets wild or produces definite currents at the makingboard due to a poor approach flow. If the vat circle flow gets too fast you will begin to wash and will have to reduce the suction, i.e., decrease the mold head. Any one of these effects can prevent the use of the mold head which you may need.

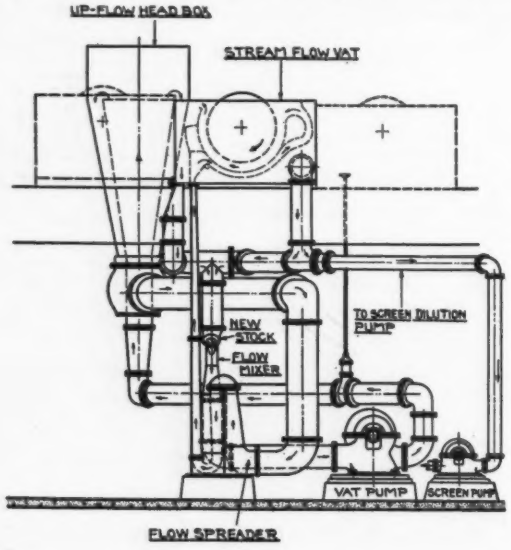


Fig. 1.
Side Elevation of Stream Flow System.

The counterflow type of vat presents no opportunity whatever to vary the vat circle flow to suit the stock and speed. The faster the speed the greater the relative movement of the mold with respect to the incoming stock. The result is a more and more open and disturbed formation and a constant increase in grain.

The older direct flow vats reduce the relative motion between mold and flow but do not permit the flow speed to be varied as much as the machine speed. Consequently heavyweight sheets are often more crossed than desired and thin or free liner plies of heavyweights tend to wash. Vats with fixed circles do not permit ideal relative clearances at front, bottom, and back of the vat circle. Changing the amount of circulating overflow does not change the flow at different points around the circle in the same proportion, because on the incoming side the flow consists of both the drainage flow and the circulating flow, whereas on the overflowing side only the circulating flow remains. Therefore, doubling the circulating flow doubles the flow velocity on the overflow side but only increases the incoming velocity by a fractional amount. In other words troubles, such as washing may occur at one point before the desired flow can be obtained through most of the forming length. The vat circle flows in such vats must be slow enough to insure safe operation on heavyweights at slow speed. As a result, we cannot increase this flow sufficiently to get best results with lightweights at higher speeds.

Of course, the direct flow vat can be limited in its control of flow velocities by insufficient pump capacity and above all by an improper approach flow. It must handle large flow quantities smoothly and without currents or the sheet will show wash streaks. The approach flow is also depended on to give a level sheet.

### What A Modern Vat System Needs

The goal of cylinder machine design today is to permit superior formation over a wider range of stock freenesses and ply thicknesses at higher speeds than heretofore and to permit control of fiber crossing to a greater degree. This implies the full use of the available forming surface and control of mold head and vat circle flow, each over its whole useful range. To accomplish this we must avoid all mechanical and hydraulic bottlenecks. The vat system must be capable of delivering around the forming surface a smooth stream even under the most extreme conditions of thin sheet, free stock, and fast circle flow.

We may set up the following essential requirements of a modern vat system:

(1) All components of flow must be intimately mixed.
(2) Air must not be entrained.
(3) The vat feed must be steady.
(4) The flow must be spread across the machine with exact evenness.
(5) The widest possible range of mold head should be available independently of circle velocities.
(6) The whole range of circle flow velocities needed for all grades and machine speeds should be available, and it should be possible to adjust the circle velocity at front, bottom, and back independently.

Mill experience has shown, that if the first four requirements are not properly taken care of the last two cannot be accomplished. Many operators have known and urged each of these points for many years, and yet every machine built until recently was definitely limited in several of these respects.

## The Stream Flow System

### General Arrangement

The new stock from the screen is introduced into the system by means of the flow mixer (Figs. 1 and 2). Mixing is intimate due to the constricted areas, and since the action takes place submerged, no air can be whipped into the stock.

The total flow from the vat pump passes through the upflow head box which provides a large steadying surface for feeding the vat. It also releases rather than entrains air as older types of head boxes usually do.

The flow spreader delivers the uniformly mixed stock to the vat inlet with exactly the same velocity at every point across the machine.

The vat has an outer vat circle which constitutes a last "smoothing" pass the full width of the vat. The inner vat circle is quickly adjustable at front, bottom, and back. The best stock velocities can be established around the complete forming length independently of the mold head.

The entire system is designed to handle large quantities of flow smoothly, steadily, and evenly across. There are no dead pockets, there are no baffles to bunch up the fibers. No air is entrained or whipped into foam at any point. The direct stream of a hose can reach every part of the wetted surface and the last drop can be drained from the system at every point. Washup is consequently easy.

### The Vat

If the stream of stock past the forming surface is

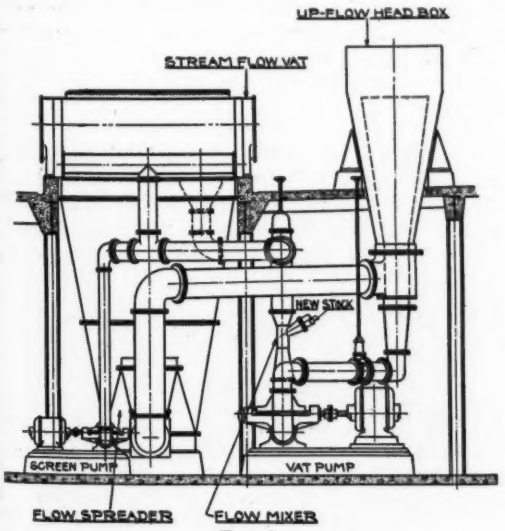


Fig. 2.
Cross Elevation of Stream Flow System.

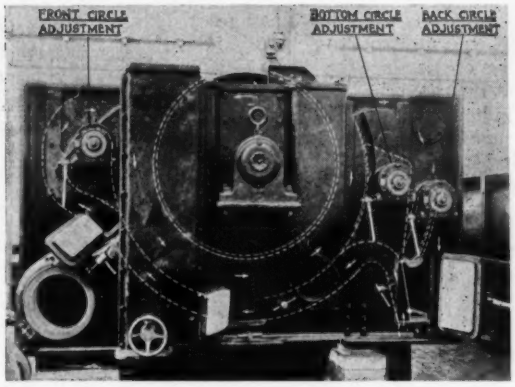


Fig. 3.
Stream Flow Vat.

of exactly the same consistency and velocity across the machine, and if the mold is of proper size and construction, then an automatically level sheet will result regardless of the quantity of flow. The excellence and range of formation then depend on the degree to which the mold head and vat circle flow can be made ideal for different conditions of stock and speed.

For a long time the need of an adjustable vat circle has been recognized especially for direct flow vats and many efforts have been made in this direction. However, the adjustments were clumsy and were incapable of accurate calibration. Not enough adjustment was possible with the particular methods used. Awkward hinges were often resorted to, and the circle areas did not change in a smooth progressive manner around the forming length. But the main stumbling block was the sealing problem. If the seal of the adjustable circle was tight enough to prevent stock leakage out of the vat, the circle could not be moved. If it was finally moved the vat circle was distorted and the vat became useless. Water chambers were tried which leaked water inwards instead of stock outwards, and they produced washed edges and resulted in breaks on the machine.

The final solution of the most perplexing problem is often a very simple one. The vat (Fig. 3) has an outer fixed circle which prevents leakage and an inner adjustable forming circle which permits establishing ideal flow conditions all around the mold for widely different grades. The incoming stock flows around the outer passage then over the making board and into the forming circle space. Since the liquid on both sides of the adjustable circle is the same stock at the same identical consistency the problem of leakage disappears. No tight seal is necessary.

The inner circle is a flexible one without hinges and takes on the smooth mathematical curve of flexure for all settings. It is composed of noncorrosive metal and heavy enough to be damage proof. It is supported at only two points allowing maximum flexing length. The bottom circle distance is varied by raising or lowering the back. The front, bottom, and back circle distances can be set independently of each other. Worm gear units acting through cross shafts operate each adjustment at both points across the machine together, so that the circle always remains square and true. Dials and pointers show the exact position.

All the other usual bottlenecks are avoided. The whole cross-sectional area of the molds is open into

the vat ends. All flow passages are large. The white water is drawn from the middle of an ample cross pipe connecting the end chambers. The spill gates are operated jointly by means of a cross shaft and can be lowered to the very bottom of the mold. Quick-opening washout doors give easy access to both circles at once. The design of the vat is compact, and it requires less space than usual. The whole construction is of the utmost simplicity and ruggedness.

The best mold head can be found for a given stock and then independently the best flow conditions all around the mold. The settings are established under actual mill conditions and judged by the sheet on the reel. If changes in stock, product, or speed are desired new settings are as easily made in a few seconds while running.

### The Flow Spreader

One of the most neglected aspects of good formation has been the proper spreading of the flow across the machine. We have long fooled ourselves because we thought that water would find its own level regardless of how we shot it into the vat inlet. But this is only true of water at rest. Water in motion has tremendous energy.

A wild vat will make a wild sheet and furthermore one that will be streaked and not level for weight. If it is impossible to deliver smoothly and evenly all the water needed, the mold head and vat circle flow must be reduced. Also baffles, "holy boards," or "still-ponds" must be put up with. Devices of this type invariably bunch up the fibers due to the strong eddies and currents which they produce. To prove this you need only introduce a baffle into a vat whose approach flow is correct and smooth. The formation will immediately become more mottled.

It is possible to spread a flow with exact evenness *if the angle of spread is made gradual enough,* especially if the cross-sectional area is progressively reduced as the width is increased. This has been done in the past on single cylinder machines, where there was ample room for an extended spreading length and has in each case been eminently successful.

The flow spreader provides the same results for any machine in a more simple and compact manner. It consists of a series of passes which widen out across the machine, while the area is reduced at the same time. In effect it is a long, smooth nozzle which is doubled back on itself to make it very compact and to allow the cover to be thrown back for easy washup. Quick opening washout gates are provided at the bottom and an air vent connects to a quick-break fitting on the cover. There are no obstructions in the flow passages. The flow spreader is usually placed in the basement or pit under the vat and thus takes up no additional machine length.

The stream when delivered to the flow spreader should have no sidewise velocity. You will note that the underfeed pipe is large to reduce the kinetic energy and has a run on the centerline of the machine to suppress any sidewise surge.

### The Upflow Headbox

To make the headbox conform to the standard of design of the rest of the system it should have ample surface for feeding the vat steadily. It should prevent the air entrainment prevalent in old headboxes and should assist in removing air. It should be more simple in construction and more easily washed up.

The upflow headbox *(4)* consists of an inner and an outer cone which are combined into the simplest form of a two-pass headbox. In contrast to older types of headboxes it has a maximum length of dam for quiet flow, and its entire surface is effective for steady feed of the vat.

The total combined and mixed flow moves upward in the inner cone, the velocity being progressively reduced. The downward flow starts slowly and increases progressively until the area of the underfeed pipe is reached. There are no dead corners whatever and washup is easy.

### The Flow Mixer

The new stock from the screens, the white water, and the circulating stock must all be combined before the flow is spread across the vat inlet. The dispersion must be uniform to produce uniform formation.

The thorough mixing of flows has always been a perplexing problem and a source of trouble. One has the choice of using a turbulence chamber or of mixing in the pump or pipes. The turbulence chamber is the least positive in its action and often whips air into the stock to cause foam streaks or bubble marks in the sheet.

The flow mixer shown in Figs. 1 and 2 does its work submerged without the presence of an air surface. The cross-sectional areas are reduced at the junctions to force intimate mixing. Where conditions permit it, the screened stock is, in addition, fed to the suction side of the circulating pump.

### Pumps, Piping, Etc.

Naturally pumps and piping must be ample for the most extreme sheets to be made. Pump power is also reduced thereby. Separate screen pumps are desirable. The dilution water does not contain circulating stock, the screen supply is unaffected by changes in the circulating flow, and the main circulating pump acts against a lower head.

Gravity flows, such as the screen discharge lines, and the circulating stock line must have choke valves to prevent cascading. All elbows need quick opening washouts.

Controls for pump motors and all valve handles should be placed on the operating floor. Each vat system of a multicylinder installation is a complete forming machine. The operator must run all of them jointly. If the machine tender is saved unnecessary steps, he will have you money in less broken and shorter change-time from one order to the next.

## Conclusion

Expenditures for enlarging the bottleneck of any process are usually the most profitable. By the removal of the serious limitations of older vat systems, the forming part can be made to function over its widest possible range. This makes possible superior formation on widely different grades, higher speeds, a wider range of stock freenesses, lower furnish costs, more control over crossing of fibers, improved finish, an automatically level sheet, reduced liner pointages, etc.

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*Note:* Steps have been taken to secure patent protection for all new devices described above.

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SUMMARY

Wall paper .....13 cs.
Wall board .....590 bdls.
Newsprint .....596 rolls
Filter paper .....5 cs.
Surface coated paper .....104 cs.
Surface baryta coated paper .....127 cs.
Basic paper .....5 cs.
Writing paper .....4 cs.
Vitraphanie paper .....6 cs.
Miscellaneous paper .....266 bls.

### WALL PAPER

S. K. Lonegren, ——, Gothenburg, 13 cs.

### WALL BOARD

Treetex Corp., ——, Gothenburg, 590 bdls.

### NEWSPRINT

Jay Madden Corp., ——, Gothenburg, 596 rolls.

### FILTER PAPER

E. H. Sargent & Co., ——, Gothenburg, 5 cs.

### SURFACE COATED PAPER

Gevaert Co. of America, *San Leonardo,* Antwerp, 62 cs., (unfinished photo-paper).
W. I. Chudleigh, *San Leonardo,* Antwerp, 7 cs.
Gevaert Co. of America, *Pennland,* Antwerp, 35 cs.

### SURFACE BARYTA COATED PAPER

P. Puttmann, *Pennland,* Antwerp, 127 cs.

### BASIC PAPER

Steffens Jones Co., Inc., *Pennland,* Antwerp, 5 cs.

### WRITING PAPER

H. W. Robinson Co., *Saturnia,* Trieste, 4 cs.

### VITRAPHANIE PAPER

American Express Co., *Pennland,* Antwerp, 6 cs.

### MISCELLANEOUS PAPER

Kraemer & Co., ——, Gothenburg, 266 bls.

### RAGS, BAGGINGS, ETC.

Darmstadt Scott & Courtney, *San Leonardo,* Rotterdam, 151 bls. bagging.
M. Harrison Co., Inc., *San Leonardo,* Rotterdam, 69 bls. flax waste.
Darmstadt Scott & Courtney, *Exiria,* Casablanca, 289 bls. cotton rags.
——, *Uruguay,* Buenos Ayres, 7 bls. rags.
R. & V. Miller, Inc., *Uruguay,* Buenos Ayres, 3 bls. rags.
Darmstadt Scott & Courtney, *Pennland,* Antwerp, 116 bls. flax waste.
W. J. Green, Inc., *Pennland,* Antwerp, 210 bls. flax waste.
C. Comiter, *Sakito Maru,* Shanghai, 50 bls. cotton waste.
O'Brien Products Co., *Sakito Maru,* Shanghai, 100 bls. cotton waste.

### CASEIN

A. Hurst & Co., Inc., *Uruguay,* Buenos Ayres, 400 bags.
American Cyanamid & Chemical Corp., *C. of Delhi,* Auckland, 66 bags.
——, *Berganger,* Buenos Ayres, 1,000 bags.
American & British Chemical Supplies, *Berganger,* Buenos Ayres, 1,000 bags.
H. S. Cramer, *Berganger,* Buenos Ayres, 423 bags.

### WOOD PULP

Gottesman & Co., Inc., ——, Gothenburg, 1,900 bls. dry sulphite.
Cellulose Sales Co., Inc., ——, Gothenburg, 1,800 bls. dry sulphite, 2,400 bls. sulphite.
J. Andersen & Co., ——, Gothenburg, 180 bls. sulphate.
Stora Kopparberg Corp., ——, Gothenburg, 530 bls. dry wood pulp.

## PHILADELPHIA IMPORTS

WEEK ENDING MARCH 23, 1940

American Cyanamid & Chemical Corp., *Mormacwren,* Buenos Ayres, 680 bags casein, 40,020 kilos.

## NORFOLK IMPORTS

WEEK ENDING MARCH 23, 1940

Darmstadt Scott & Courtney, *San Leonardo,* Rotterdam, 277 bls. old waste bagging.
Dixie Jute Bagging Corp., *San Leonardo,* Rotterdam, 70 bls. old bagging.

## BALTIMORE IMPORTS

WEEK ENDING MARCH 23, 1940

American Cyanamid & Chemical Corp., *C. of Delhi,* Auckland, 480 bags casein.

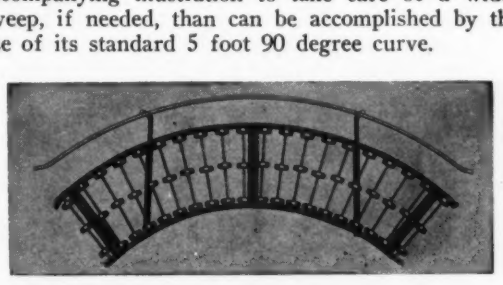
## LOS ANGELES IMPORTS

WEEK ENDING MARCH 23, 1940

——, *Rosebank,* Powell River, 1,131 pkgs. newsprint.
——, *Yamagiri Maru,* Tokyo, 2 cs. writing paper.
——, *Lexa Maersk,* Yokohama, 6 cs. hanging paper.
——, *Cascade,* Ocean Falls, 2,201 rolls newsprint.

## New Metzgar Curve

The Metzgar Company, Grand Rapids, Mich., manufacturer of modern, light, portable wheel and roller type gravity conveyors, has recently developed a unique 8 foot curve which is represented in the accompanying illustration to take care of a wider sweep, if needed, than can be accomplished by the use of its standard 5 foot 90 degree curve.



NEW 8 FOOT CURVE.

This 8 foot curve involves the same principles of the 5 foot curve, with oilless dust-proof wheels, and it employs the same sturdy hot-rolled channel members, and an all arc-welded construction. It carries with it a one-year service guarantee.

## To Organize Paper Trade Council

At a meeting held at the Pennsylvania Hotel, New York City, on the evening of March 20 the officers and executive secretaries of the Cosmopolitan Twine and Paper Association, Metropolitan Bag and Paper Jobbers Association, Paper Trade Association of New Jersey, and the Paper Association of New York City, voted to organize a Paper Trade Council for the metropolitan New York area. This Paper Trade Council is to act as the coordinating link between the four local associations and the National Paper Trade Association of which they now are all members. It is felt that the council will bring about better relations among paper merchants in the metropolitan area, between them and their customers, and with the trade throughout the country.

The following were in attendance at the meeting: David Katz, Imperial Bag and Paper Company, New York City; L. J. Salkin, H. Pollack, Brooklyn; S. J. Fishman, Finkel Paper Company, Brooklyn, N. Y.; Wm. Solomon, Globe Paper Company, New York City; Samuel Hayward, Yonkers, N. Y.; A. H. Stein, Yorkville Paper Company, New York City; Luis Silfen, Benjamin Silfen Inc., Brooklyn; W. H. Hinrichs, Fred W. Hinrichs, Inc. New York City; E. Grossman, Grossman Paper and Bag Company, Newark, N. J.; David J. Liberman & Co., Jersey City, N. J.; C. C. Indruk, Tappen & Indruk Company, New York City; Irwin Slote, Executive Secretary Paper Association of New York City; E. E. Turkel, Executive Secretary Paper Association of New Jersey; N. A. Rothstein, Executive Secretary Metropolitan Bag and Paper Jobbers Association; David Kasson, Executive Director Cosmopolitan Twine and Paper Association; R. H. Ziegler, assistant secretary of The National Paper Trade Association.

## Made Ground Wood Superintendent

[FROM OUR REGULAR CORRESPONDENT]

VANCOUVER, B. C., March 26, 1940—W. McGillivray has been appointed ground wood superintendent for the Powell River Company at its plant at Powell River, B. C. He went to this plant in 1919 after serving in the Royal Air Force during the war, and after working in various capacities became head millwright in 1926 and assistant ground wood superintendent in 1929.

Ernest P. Ketchum, popular superintendent of the ground wood division of the Powell River Company, has now retired after 28 years' service with the firm. "Ernie" has been associated with the company almost since its inception and has been equally popular with the management and his crewmen.

## Robert Stewart Resigns

[FROM OUR REGULAR CORRESPONDENT]

WATERTOWN, N. Y., March 25, 1940—Announcement is made here that Robert Stewart has resigned as superintendent at the Bagley & Sewall Company after holding that position for several years. It is possible that he may become connected with another concern in the country engaged in the manufacture of paper and pulp making equipment in the near future. For over forty years he was identified with the Bagley & Sewall Company, having started as a boy apprentice to learn the machinist's trade. Later he was for about 25 years a foreman of the machine shops and for the past few years served as superintendent.

## Discuss Finnish Pulp Situation

At the regular Monday luncheon of the Salesmen's Association of the Paper Industry held at the Hotel Lexington, New York the period was devoted to a round-table discussion of the Finnish pulp and paper situation resulting from the peace treaty with Russia, with Benton Cancell of the American Paper and Pulp Association, Royal S. Kellogg, of the Newsprint Service Bureau and L. C. F. Rain of H. Reeve Angel & Co., Inc. participating. Under date of March 16, 1940, the American Paper and Pulp had issued the following statement:

"Preliminary advice from the Department of Commerce, Washington, D. C., indicates that the territory ceded to Russia includes 13 pulp mills. These 13 mills constitute about 19 per cent of Finland's pulp capacity, which amounts to 392,000 tons. Based on the total of the Finnish pulp capacity, this amounts to 27 per cent of the sulphite, 22 per cent of the sulphate, and 4 per cent of the groundwood capacities, respectively. Additionally, this involves a production of 125,000 tons of newsprint, 37,000 tons of paperboard, and 32,500 tons of other paper products."

Information received by Mr. Kellogg and Mr. Rain indicated that the Department of Commerce's estimate of 125,000 tons for newsprint transferred to Russia was much too large, probably 20,000 to 25,000 tons would be more nearly correct. Mr. Rain stated that most of the Finnish pulp and paper mills would be able to resume production within a month. The principal difficulty now is transportation. Boats are scarce and the ports are blocked with ice on account of the extremely low temperature of the past winter, which was the worst in the history of the Baltic states. When the details of the peace treaty are definitely known, a more accurate appraisal of the situation can be made.

## Low Water Handicaps Mills

[FROM OUR REGULAR CORRESPONDENT]

GLENS FALLS, N. Y., March 23, 1940—The paper mill branch of Finch, Pruyn & Co., was again this week forced to return to a 136-hour working week instead of the customary 144 after running at capacity for two weeks. Low water was responsible and instead of starting at 8 A.M. the paper machines were started at 4 P.M. An official of the concern said that the mill would return to full time schedules as soon as water conditions would permit.

Two paper machines in the International Paper Co., at Corinth, have also been shut down because of a shortage of water. No. 7 machine was shut down late last week while No. 8 suspended operations several weeks ago. It was stated that neither machine would be started until water conditions improve in the river.

## Arnold-Roberts Issue Monthly Price List

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., March 25, 1940—The Arnold-Roberts Company is now issuing a price-list every month, in which all the lines are included, with prices of the bonds, writings and other papers listed in order from the lowest to the highest. These lines are distributed and serviced from five centrally located warehouses in New England; Boston and Springfield, Mass.; Providence, R. I.; New Haven, Conn., and Augusta, Me.

# New York Paper and Pulp Market Review

## Sales Volume In Some Grades of Paper Is Running About 7 Per Cent Above Current Week of Last Year—Paper Production A Little Higher Than In 1939—Pulp Prices Firm—Some Grades of Paper Stock Lower.

Office of the PAPER TRADE JOURNAL,
Wednesday, March 27, 1940.

Wholesale sales in the paper market are reported as holding up relatively well in many lines. Reports from many manufacturers' representatives, jobbers, and general paper merchants during the current week indicate that the level of trade is a little more than 7 per cent higher than at this date last year. Although some economists take a less encouraging view of the state of business for the first half of this year, other economists look for a good improvement in general business to begin late in April. The latter opinion seems to be more in line with local reports.

The index of general business activity declined to 95.2 per cent for the week ended March 16, from 96.0 per cent for the preceding week, compared with 88.7 per cent for the like week in 1939.

Paper production for 209 mills for the week ended March 16 was estimated at 83.7 per cent, compared with 82.6 per cent for 1939, with 68.7 per cent for 1938, with 90.7 per cent for 1937, and with 71.0 per cent for the like week in 1936.

Paper board production for the week ended March 16 was 70.0 per cent, compared with 73.0 per cent for 1939, with 60.0 per cent for 1938, with 87.0 per cent for 1937, and with 65.0 per cent for the corresponding period in 1936.

Production of newsprint continues at a relatively good level. The latest reports indicate that the domestic output for the first two months of this year was 17,449 tons more than for the same period last year, and Canadian output was 73,842 tons more for the like period.

Retail advertising linage in newspapers in eight principal cities for the week ended March 9 was 5.7 per cent above the corresponding week in 1939. New York City newspapers were up 4.3 per cent for the week cited, but off 3.5 per cent for the year to date.

### Mechanical Pulp

No important change in the mechanical pulp market has been reported during the current week. Prices are firm and continue unchanged at prevailing market quotations.

### Chemical Pulp

Prices on all grades of chemical pulp are firm, with business reported in some quarters of the trade as rather slow this week. Mills are reported to have ample stocks on hand and stocks on docks are of sufficient size to make an easy situation in this market. No price changes have been reported this week.

### Rags

Mill buying in some grades of rags is reported fair and irregular in some quarters of the trade. Prices hold unchanged on all grades of new and old rags, but the No. 2 roofing grade has declined below $1 and is currently quoted at from .92½ to .97½.

### Old Rope and Bagging

Prices on old rope continue steady, with mill buying reported as moderately good. No change from prevailing market quotations has been reported this week.

Trading in old bagging continues in limited volume and prices have been largely nominal. No important change has been reported during the current week.

### Old Waste Paper

The paper stock market is reported as soft at this date. Quotations on some grades are lower this week, solid flat book being currently quoted at from .62½ to .67½, strictly folded news at from .35 to .37½, and No. 1 mixed paper at from .17½ to .20.

### Twine

Prices on all grades of twine are firm with the trade outlook reported as somewhat improved. No important change in quotations on any grade of hard or soft fiber twine has been reported during the current week.

## TAPPI Notes

The next meeting of the Pacific Section of the Technical Association will be held at Port Angeles, Washington on April 9, 1940.

The Delaware Valley Section will meet at the Engineers Club, Philadelphia on April 12. W. O. Wheeler of the Appleton Machine Company will talk on "Calenders and Calender Rolls".

George S. Douglas has been transferred from the Chillicothe, Ohio mill to the N. Leominster, Mass. mill of the Mead Corporation.

J. G. Long, formerly of the Crown-Willamette Paper Company is now with the Fir-Tex Company, St. Helens, Ore.

G. S. Witham Jr., formerly of the Inland Empire Paper Company is now located at 12 Cunningham avenue, Glens Falls, N. Y.

C. Peter Spring, formerly of the Riegel Paper Corporation is now with the Chase Bag Company, Chagrin Falls, Ohio.

Alfred H. Nadelman, formerly of Milprint, Inc., Milwaukee, Wis. is now with the Glassine Paper Company, W. Conshoken, Pa.

H. A. Hughes, formerly of the Taggert Company, Watertown, N. Y. is now with the Bates Valve Bag Company, New Orleans, La.

## Colombia Has One Paper Mill

Paper manufacture in Colombia is limited to one mill, which is a newly launched enterprise according to a report from the Office of the American Commercial Attache, Bogota. This plant was established at Barranquilla in the fall of 1937. Its equipment as of January 1, 1939, consisted of two beaters, one auxiliary beater, one Fourdrinier paper machine, one bulk winder, one adjustable winder, and one cutter. No coating equipment nor bleaching equipment had been installed. The plant is reported to be turning out currently from 4½ to 5 metric tons, working three 8-hour shifts.

# MISCELLANEOUS MARKETS

Office of the PAPER TRADE JOURNAL,
Wednesday, March 27, 1940.

BLANC FIXE—Quotations on blanc fixe are firm and continue unchanged at prevailing market levels. The pulp is currently quoted at $35 per ton, in barrels, at works; the powder is offered at $50 per ton, f.o.b., works.

BLEACHING POWDER—Prices on bleaching powder are firm and continue unchanged at prevailing market quotations. Bleaching powder is currently quoted at $2 per 100 pounds, in drums, at works.

CASEIN—Quotations on casein are unchanged for this week. Standard domestic casein, 20-30 mesh, is currently quoted at from 10½ to 11 cents per pound; 80-100 mesh, at from 11 to 11½ cents per pound; all prices in bags, car lots. Standard Argentina casein is currently offered at from 10½ to 11 cents per pound; French casein at from 14½ to 15 cents per pound.

CAUSTIC SODA—Prices on caustic soda are firm and unchanged with trading continuing moderately good. Solid caustic soda is currently quoted at $2.30 per 100 pounds; flake and ground at $2.70 per 100 pounds, in drums, at works.

CHINA CLAY—Quotations on china clay are firm and continue unchanged this week. Domestic filler clay is currently quoted at from $7 to $15 per ton; coating clay at from $11 to $22 per ton, at mines. Imported clay is quoted at from $13 to $25 per long ton, ship side.

CHLORINE—The demand for chlorine continues to be reported as moderate, prices firm and unchanged for the week. Chlorine is currently quoted at $1.75 per 100 pounds, in single-unit tank cars, f.o.b., works.

ROSIN—The rosin market is reported as firm with prices unchanged for the week, "G" gum rosin is currently quoted at $5.50 per 280 pounds, gross weight, in barrels, Savannah. "FF" wood rosin is currently quoted at $5.45 per 280 pounds, gross weight, in barrels, New York. Seventy per cent gum rosin size is offered at $2.90 per 100 pounds, f.o.b., shipping point.

SALT CAKE—Prices on salt cake are firm under a moderately good demand with current quotations continuing practically nominal. Domestic salt cake is currently quoted at $17 per ton, in bulk; chrome salt cake at $16 per ton. All prices in car lots, f.o.b. shipping point. The quotation of $20 per ton on imported salt cake continues nominal.

SODA ASH—Quotations on soda ash are firm and continue to conform to prevailing market quotations. Demand continues moderately good. Quotations on soda ash in car lots, per 100 pounds, are as follows: in bulk, $.90; in paper bags, $1.05; and in barrels, $1.35.

STARCH—Prices on corn starch continue unchanged at prevailing market quotations. Pearl is currently quoted at $2.60 per 100 pounds; powdered starch at $2.70 per 100 pounds; all prices in bags, car lots, f.o.b., Chicago.

SULPHATE OF ALUMINA—Quotations on sulphate of alumina are firm under a moderate demand. The commercial grades are currently quoted at $1.15 per 100 pounds; iron free at $1.45 per 100 pounds, in bags, car lots, f.o.b., works.

SULPHUR—Prices on sulphur are firm and continue unchanged at prevailing market quotations. Annual contracts are currently quoted at $16 per long ton, f.o.b., mines. Spot and nearby car lots are quoted at $19 per ton.

TALC—Quotations on talc are firm and continue unchanged at prevailing market prices. Domestic talc is currently quoted at from $15 to $18 per ton, Eastern mines. Imported talc is offered at from $23 to $45 per ton.

# MARKET QUOTATIONS

## Paper

(Delivered New York)

| | | | |
|---|---|---|---|
| News, per ton— | | | |
| Roll, contract | $50.00 | @ | — |
| Sheets | 58.00 | " | — |
| Kraft—per cwt.—Delivered Zone A | | | |
| Northern, Extra Quality | $5.00 | @ | $5.50 |
| Superatandard | 4.62½ | " | 5.00 |
| Northern Standard Wrapping | 4.25 | " | 4.62½ |
| Standard Wrapping | 4.00 | " | — |
| Tissues—Per Ream—Carlots | | | |
| White No. 1 | .92½ | @ | — |
| White No. 1 M. G. | .90 | " | — |
| White No. 1½ | .70 | " | — |
| White No. 2 | .65 | " | — |
| Anti-Tarnish M. G. | .80 | " | — |
| Colored | .87½ | " | — |
| Kraft | .80 | " | — |
| Manila | .65 | " | — |
| Unbl. Toilet, 1 M. | 3.50 | " | — |
| Bleached Toilet | 5.26 | " | — |
| Paper Towels, Per Case— | | | |
| Unbleached, Jr. | 1.95 | @ | — |
| Bleached, Jr. | 3.20 | " | — |
| Manila—per cwt.—C. l. f. a. | | | |
| No. 1 Jute | 8.25 | @ | 10.25 |
| No. 1 Manila Wrapping, 35 lb. | 5.25 | " | — |
| No. 2 Manila Wrapping, 35 lb. | 5.00 | " | — |
| Boards, per ton— | | | |
| News | 35.00 | @ | 40.00 |
| Chip | 35.00 | " | 40.00 |
| Sgl. Mla. Ll. Chip | 55.00 | " | — |
| White Pat. Coated | 67.50 | " | — |
| Kraft Liners | 55.00 | " | — |
| Binders Boards | 73.00 | " | 80.00 |

The following are representative of distributors' resale prices:

Rag Content Bonds and Ledgers—
White, Assorted Items,
Delivered in Zone 1:

| | Bonds | | Ledgers |
|---|---|---|---|
| 100% Rag Ext. No. 1 | $39.10 @ $46.00 | | $40.25 @ $47.25 |
| 100% Rag | 31.05 " 36.50 | | 32.20 " 37.75 |
| 85% Rag | .... " .... | | 29.90 " 35.00 |
| 75% Rag | 23.60 " 27.75 | | 24.75 " 29.00 |
| 65% Rag | .... " .... | | 21.65 " 26.25 |
| 50% Rag | 17.55 " 21.50 | | 18.70 " 22.75 |
| 25% Rag | 14.65 " 17.75 | | 15.80 " 19.25 |

Colors at $1.00 cwt. extra.

Sulphite Bonds and Ledgers—
White, Assorted Items,
Delivered in Zone 1:

| | Bonds | Ledgers |
|---|---|---|
| No. 1 | $8.95 @ $11.00 | $10.10 @ $12.25 |
| No. 2 | 8.05 " 9.75 | 9.25 " 11.25 |
| No. 3 | 7.60 " 9.25 | 8.50 " 10.75 |
| No. 4 | 7.30 " 9.00 | 8.50 " 10.25 |

Colors $1.00 cwt. extra.

Free Sheet Book Papers—
White, Cased Paper,

Delivered in Zone 1:

| | | | |
|---|---|---|---|
| No. 1 Glossy Coated | $11.90 | @ | $13.50 |
| No. 2 Glossy Coated | 10.35 | " | 11.75 |
| No. 3 Glossy Coated | 9.55 | " | 11.00 |
| No. 4 Glossy Coated | 9.15 | " | 10.50 |
| No. 1 Antique (watermarked) | 8.35 | " | 9.50 |
| No. 2 Offset | 7.70 | " | 9.00 |
| A Grade E. F. | 7.50 | " | 8.75 |
| A Grade S. & S. C. | 7.75 | " | 9.00 |
| B Grade E. F. | 6.95 | " | 8.00 |
| B Grade S. & S. C. | 7.20 | " | 8.25 |
| C Grade E. F. | 6.65 | " | 7.75 |
| C Grade S. & S. C. | 6.90 | " | 8.00 |
| D Grade E. F. | 6.40 | " | 7.50 |
| D Grade S. & S. C. | 6.65 | " | 7.75 |

Ivory & India at $.50 cwt. extra.

## Mechanical Pulp

(On Dock, Atlantic Ports)

| | | | |
|---|---|---|---|
| No. 1 Imported— | | | |
| Moist | $38.00 | @ | 44.00 |
| Dry | 38.00 | " | 44.00 |
| (Delivered) | | | |
| No. 1 Domestic and Canadian | 40.00 | @ | 42.00 |

## Chemical Pulp

(On Dock, Atlantic, Gulf and West Coast Ports)

| | | | |
|---|---|---|---|
| Bleached Sulphite (Domestic and Foreign)— | | | |
| Prime Bleached Sulphite | 3.00 | @ | 3.40 |
| Prime Qualities— | | | |
| Easy-Bleaching Sulphite | 2.75 | " | 2.95 |
| Strong Unbleached Sulphite | 2.75 | " | 2.85 |
| (On Dock, Atlantic Ports) | | | |
| Kraft Bleached | 3.37½ | @ | 3.50 |
| Kraft Light & Strong | 2.50 | " | 2.75 |
| Kraft No. 1 | 2.40 | " | 2.63 |
| (F. o. b. Pulp Mill) | | | |
| Kraft Domestic and Canadian | 2.00 | " | 2.37½ |
| (Delivered) | | | |
| Soda Bleached | 2.90 | " | — |

Add 60 cents per short ton, dock charges for Albany; $2.50 for Lake Ports East and $3.50 for Lake Ports West of Mackinac Straits.

## Domestic Rags

### New Rags

(Prices to Mill f. o. b. N. Y.)

| | | | |
|---|---|---|---|
| Shirt Cuttings— | | | |
| New White, No. 1 | 7.50 | @ | 7.75 |
| Silesias No. 1 | 4.50 | " | 4.75 |
| New Unbleached | 7.50 | " | 7.75 |
| Blue Overall | 5.00 | " | 5.25 |
| Fancy | 2.25 | " | 2.50 |
| Washables | 2.00 | " | 2.15 |
| Mixed Khaki Cuttings | 2.75 | " | 3.00 |
| O. D. Khaki Cuttings | 3.25 | " | 3.50 |

### Old Rags

| | | | |
|---|---|---|---|
| White, No. 1— | | | |
| Repacked | 3.25 | " | 3.50 |
| Miscellaneous | 2.75 | " | 3.00 |
| White, No. 2— | | | |
| Repacked | 2.50 | " | 2.75 |
| Miscellaneous | 2.00 | " | 2.25 |
| Thirds and Blues— | | | |
| Repacked | 2.00 | " | 2.25 |
| Miscellaneous | 1.75 | " | 1.90 |
| Roofing Rags— | | | |
| No. 1 | 1.15 | " | 1.25 |
| No. 2 | .92½ | " | .97½ |
| No. 3 (bagging) | 1.50 | " | 1.60 |
| No. 4 | .60 | " | .65 |
| No. 5A | .60 | " | .65 |

## Foreign Rags

All prices nominal.

### New Rags

| | | | |
|---|---|---|---|
| New Dark Cuttings | 2.25 | @ | 2.40 |
| New Mixed Cuttings | 2.00 | " | 2.20 |
| New Light Silesias | 5.50 | " | 5.75 |
| Light Flannelettes | 5.50 | " | 5.75 |
| New White Cuttings | 7.00 | " | 7.50 |
| New Light Oxford | 4.00 | " | 4.50 |
| New Light Prints | 3.00 | " | 3.25 |

### Old Rags

| | | | |
|---|---|---|---|
| No. 1 White Linens | 7.50 | " | 8.50 |
| No. 2 White Linens | 6.50 | " | 7.50 |
| No. 3 White Linens | 4.50 | " | — |

WOOD PULP
AGENTS

**PRICE & PIERCE, Ltd.,**

60 EAST 42nd ST.
NEW YORK

**West Virginia Pulp and Paper Company**

230 Park Ave.
New York

35 East Wacker Drive
Chicago

Public Ledger Building
Philadelphia, Pa.

503 Market St.
San Francisco, Cal.

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ENGLISH FINISH SUPERCALENDERED
MACHINE FINISHED BOOK
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Offset, Envelope, Bond, Writing, Mimeograph, Ledger, Eggshell, Cover and Music Papers, Index Bristol, Post Card and Label Papers

HIGH GRADE COATED BOOK

• • • •

KRAFT WRAPPING AND KRAFT ENVELOPE
KRAFT LINER BOARD
BLEACHED SULPHITE AND SODA PULP
BLEACHED AND UNBLEACHED KRAFT PULP

MILLS:

Mechanicville, New York
Luke, Maryland
Covington, Virginia
Tyrone, Pennsylvania
Williamsburg, Pennsylvania
Cass, West Virginia
Charleston, South Carolina

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**MORRIS**
**ST-P Stock Pumps**
Patents Pending

are guaranteed not to bind or clog when handling long-fibre rag stock or raw waste paper stock—

will handle heavy stock at uniform flow without dehydrating—

will give constant capacity at varying heads—

will assure thoroughly reliable, trouble-free operation when handling heavy pulp at consistencies of 6% and above.

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EXCELSIOR
KNOX
Woolen Co.
Camden, Me.
FELTS & JACKETS

TRADE MARK

BUT also a guarantee by men who for 75 years have prided themselves in making finer felts. TO YOU —this is the mark of dependability, longer felt life and greater saving.

KNOX WOOLEN CO.
CAMDEN, MAINE.

| | | | |
|---|---|---|---|
| No. 4 White Linens. | 2.25 | @ | 3.25 |
| No. 1 White Cotton. | 4.25 | " | 4.75 |
| No. 2 White Cotton. | 3.25 | " | 3.75 |
| No. 3 White Cotton. | 2.50 | " | 3.00 |
| No. 4 White Cotton. | 1.90 | " | 2.20 |
| Extra Light Prints.. | 2.00 | " | 2.40 |
| Ord. Light Prints... | 1.75 | " | 2.15 |
| Med. Light Prints... | 1.55 | " | 1.95 |
| Dutch Blue Cottons. | 2.25 | " | 2.50 |
| French Blue Linens.. | 3.00 | " | — |
| Checks and Blues... | 2.00 | " | — |
| Linsey Garments.... | 1.90 | " | 2.00 |
| Dark Cottons..... | 1.50 | " | 1.60 |
| Old Shopperies..... | 1.30 | " | 1.45 |
| New Shopperies..... | 1.45 | " | 1.50 |
| French Blues..... | 2.25 | " | 2.50 |

### Old Rope and Bagging

(Prices to Mill, f. o. b. N. Y.)

| | | | |
|---|---|---|---|
| Gunny No. 1— | | | |
| Foreign ..... | 2.75 | @ | 3.00 |
| Domestic ..... | 2.50 | " | 2.75 |
| Wool Tares, light... | 2.00 | " | 2.25 |
| Wool Tares, heavy.. | 2.12½ | " | 2.25 |
| Bright Bagging..... | 2.25 | " | 2.50 |
| Manila Rope— | | | |
| Foreign ..... | 5.00 | " | 5.75 |
| Domestic ..... | 4.75 | " | 5.00 |
| Jute Threads..... | 3.00 | " | 3.25 |
| Sisal Strings..... | 2.00 | " | 2.25 |
| Mixed Strings..... | .70 | " | .85 |

### Old Waste Papers

(F. o. b. New York)

| | | | |
|---|---|---|---|
| Shavings— | | | |
| White Envelope Cuttings ..... | 3.10 | @ | 3.25 |
| Ordinary Hard White No. 1.... | 2.25 | @ | 2.50 |
| Soft White No. 1.. | 1.80 | " | 1.90 |
| Soft White Extra.. | 2.50 | " | 2.60 |
| Flat Stock— | | | |
| Stitchless ..... | 1.10 | " | 1.25 |
| Overissue Mag.... | 1.00 | " | 1.10 |
| Solid Flat Book... | .62½ | " | .67½ |
| Crumbled No. 1... | .70 | " | .75 |
| Ledger White Stock. | 1.60 | " | 1.70 |
| Ledger Stock Colored | 1.05 | " | 1.15 |
| Manila— | | | |
| New Env. Cut.... | 1.70 | " | 1.80 |
| New Cuttings..... | 1.30 | " | 1.40 |
| Old Kraft Machine— | | | |
| Compressed bales.. | 1.05 | " | 1.15 |
| News— | | | |
| No. 1 White News | 1.75 | " | 1.90 |
| Strictly Overissue. | .70 | " | .75 |
| Strictly Folded.... | .35 | " | .37½ |
| Corrugated ..... | .40 | " | .45 |
| No. 1 Mixed Paper.. | .17½ | " | .20 |

### Twines

(F. o. b. Mill)

(Soft Fiber)

| | | | |
|---|---|---|---|
| Coarse Polished— | | | |
| India ..... | .18½ | @ | — |
| White Hemp..... | .18½ | " | — |
| Fine Polished— | | | |
| Fine India..... | .23 | " | — |
| Unpolished— | | | |
| Box ..... | .14¾ | " | — |
| Paper Makers..... | .15 | " | — |
| Tube Rope..... | .16¼ | " | — |
| Wall Paper..... | .15¾ | " | — |
| Wrapping ..... | .18 | " | — |
| Soft Fiber Rope... | .16¼ | " | — |
| Cotton ..... | .21 | " | — |
| (Hard Fiber) | | | |
| Medium Java..... | .19 | " | — |
| Mex. Sisal..... | .16 | " | — |
| Manila ..... | .24 | " | — |
| Domestic ..... | — | " | 2.50 |
| Sisal Rope..... | 2.25 | " | 2.65 |
| Mixed Rope..... | .85 | " | 1.00 |
| Transmission Rope.. | 3.00 | " | 3.50 |
| Foreign ..... | 3.50 | @ | — |
| Soft Jute Ropes..... | 3.00 | " | 3.50 |
| Jute Carpet Threads. | 1.50 | " | 1.75 |
| Gunny Bagging— | | | |
| Foreign ..... | 2.85 | " | — |
| Domestic ..... | 2.50 | " | 2.60 |
| Bleachery Burlap.... | 3.50 | " | 3.75 |
| Scrap Burlap— | | | |
| Foreign ..... | 2.60 | " | — |
| Domestic ..... | 2.50 | " | — |
| Scrap Sisal..... | 2.50 | " | 2.60 |
| Scrap Sisal for Shredding ..... | 2.30 | " | 2.65 |
| Wool Tares, Heavy.. | 2.50 | " | 2.60 |
| New Burlap Cuttings | 3.25 | " | 3.50 |
| Aust. Wool Pouches. | 2.90 | " | 3.00 |
| Heavy baling bagging | 2.60 | " | 2.90 |
| Paper Mill Bagging.. | 1.75 | " | 2.00 |
| No. 2 Bagging ..... | 1.10 | " | 1.25 |

### Domestic Rags ( New)

(F. o. b. Boston)

| | | | |
|---|---|---|---|
| Shirt Cuttings— | | | |
| New Light Prints. | — | @ | .03 |
| Fancy Percales.... | .04 | " | .04¼ |
| New White No. 1. | — | " | .07½ |
| New Light Flannelettes ..... | .05 | " | .05¼ |
| Silesias No. 1 ..... | .05 | " | — |
| New Black Silesias.. | .03½ | " | .03¾ |
| Soft Unbleached... | .07 | " | .07½ |
| Blue Cheviots..... | .05 | " | .05½ |
| Fancy ..... | .02 | " | .02½ |
| Washable ..... | .02 | " | .02½ |
| Cottons—According to Gradoes— | | | |
| Blue Overalls..... | .04¼ | " | .05 |
| New Black, soft .. | .03¾ | @ | .04 |
| Khaki Cuttings..... | .03 | " | — |
| O. D. Khaki..... | .03 | " | .03½ |
| Corduroy ..... | .02¾ | " | .03 |
| New Canvas..... | .06¾ | " | .07¼ |
| B. V. D. Cuttings... | .07 | " | .07¼ |

### Domestic Rags (Old)

(F. o.b. Boston)

| | | | |
|---|---|---|---|
| White No. 1— | | | |
| Repacked ..... | — | " | 2.75 |
| Miscellaneous .... | 2.00 | " | 2.50 |
| White No. 2— | | | |
| Repacked ..... | 1.90 | " | 2.00 |
| Miscellaneous .... | 2.00 | " | 2.25 |
| Twos and Blues..... | 1.50 | " | 2.00 |
| Old Blue Overalls .. | 1.60 | " | 2.00 |
| Thirds and Blues— | | | |
| Repacked ..... | — | " | 1.25 |
| Miscellaneous .... | — | " | 1.00 |
| Black Stockings..... | 3.50 | " | 4.00 |
| Roofing Stock— | | | |
| No. 1..... | 1.00 | " | 1.25 |
| No. 2..... | — | " | 1.10 |
| No. 3..... | — | " | .90 |

### Foreign Rags

(F. o. b. Boston)

| | | | |
|---|---|---|---|
| Canvas ..... | .04¼ | @ | — |
| Dark Cottons..... | (nominal) | | |
| Dutch Blues..... | (nominal) | | |
| New Checks and Blues | (nominal) | | |
| Old Fustians..... | (nominal) | | |
| Old Linsey Garments. | (nominal) | | |
| New Silesias..... | (nominal) | | |

## PHILADELPHIA

### Domestic Rags (New)

(Price to Mill, f.o.b. Phila.)

| | | | |
|---|---|---|---|
| Shirt Cuttings— | | | |
| New White No. 1. | .07¼ | @ | .07½ |
| New White No. 2. | .04 | " | .04½ |
| Light Silesias..... | — | " | .04½ |
| Silesias, No. 1.... | — | " | .04½ |
| Black Silesias, soft | — | " | .03¾ |
| New Unbleached.. | .05½ | " | .06 |
| Washable, No. 1.. | — | " | .04 |
| Blue Overall..... | — | " | .05 |
| Cottons—According to grades— | | | |
| Washable No. 2... | — | " | .02 |
| New Blue ..... | — | " | .02 |
| Fancy Percales.... | — | " | .03 |
| New Black Soft... | — | " | .04 |
| New Light Seconds | .04½ | " | .05 |
| New Dark Seconds | — | " | 1.55 |
| Khaki Cuttings— | | | |
| No. 1 O. D..... | .03½ | " | .04 |
| No. 2 Mixed..... | .03 | " | .03¼ |
| Corduroy ..... | — | " | .02½ |
| New Canvas..... | .05½ | " | .06 |
| New Black Mixed. | — | " | .03 |

### Domestic Rags (Old)

| | | | |
|---|---|---|---|
| White No. 1— | | | |
| Repacked ..... | 3.25 | @ | 3.75 |
| Miscellaneous .... | 2.75 | " | 3.00 |
| Thirds and Blues— | | | |
| Miscellaneous .... | 2.00 | " | 2.25 |
| Repacked ..... | 2.50 | " | 2.75 |
| Black Stockings (Export) ..... | 3.50 | " | 4.00 |
| Roofing Stock— | | | |
| Foreign No. 1....Nominal | | | |
| Domestic No. 1.. | 1.50 | " | 1.60 |
| Domestic No. 2... | 1.35 | " | 1.45 |
| Roofing Bagging.. | — | " | 1.30 |

### Bagging

(f.o.b. Phila.)

| | | | |
|---|---|---|---|
| Gunny, No. 1— | | | |
| Foreign .....Nominal | | | |
| Domestic ..... | 2.50 | @ | 3.00 |
| Manila Rope..... | 3.25 | " | 3.75 |
| Sisal Rope..... | 1.75 | " | 2.00 |
| Mixed Rope..... | 1.25 | " | 1.50 |
| Scrap— | | | |
| No. 1..... | 2.25 | " | 2.50 |
| No. 2..... | — | " | 1.30 |
| Wool Tares, heavy.. | 3.50 | " | 3.70 |
| Mixed Strings .... | .75 | " | 1.00 |
| No. 1 New Light Burlap ..... | 3.00 | " | 3.50 |
| New Burlap Cuttings | 2.00 | " | 2.25 |

### Old Papers

(f.o.b. Phila.)

| | | | |
|---|---|---|---|
| Shavings— | | | |
| No. 1 Hard Write | 2.25 | @ | 2.30 |
| No 2 Hard White | 2.00 | " | 2.10 |
| No. 1 Soft White | 1.85 | " | 1.90 |
| No. 2 Soft White | 1.50 | " | 1.60 |
| No. 1 Mixed..... | .90 | " | 1.00 |
| Solid Ledger Stock.. | 1.50 | " | 1.60 |
| Ledger Stock, white. | 1.40 | " | 1.45 |
| Ledger Stock, colored | 1.10 | " | 1.20 |
| No. 1 Books, heavy.. | .85 | " | .90 |
| Manila Cuttings..... | 1.75 | " | 1.80 |
| Print Manila..... | .50 | " | .55 |
| Container Manila.... | .40 | " | .45 |
| Kraft Paper..... | 1.00 | " | 1.10 |
| No. 1 Mixed Paper.. | .25 | " | .30 |
| Straw Board Chip... | — | " | .40 |
| Binders Board Chip.. | .40 | " | — |
| Corrugated Board.... | .50 | " | .60 |
| Overissue News..... | .70 | " | .75 |
| Old Newspapers..... | .40 | " | .45 |

## BOSTON

### Old Papers

(f.o.b. Boston)

| | | | |
|---|---|---|---|
| Shavings— | | | |
| No. 1 Hard White | 2.25 | @ | 2.50 |
| No. 1 Soft White | 1.85 | " | 2.15 |
| No. 2 Mixed..... | .75 | " | .80 |
| Solid Ledger Books.. | 1.30 | " | — |
| Overissue Ledger Stock ..... | 1.30 | " | 1.50 |
| Mixed Ledgers..... | .85 | " | .90 |
| No. 1 Books, heavy.. | 1.00 | " | 1.10 |
| No. 1 Books, light.. | .65 | " | .75 |
| Crumpled Stitchless Book Stock..... | .55 | " | .65 |
| Manila Env. Cuttings | 1.70 | " | 1.85 |
| Manila Envelope Cuttings, extra quality | 2.35 | " | 2.60 |
| White Blank News.. | 1.40 | @ | 1.50 |
| No. 1 Kraft..... | 1.25 | " | 1.30 |
| Mixed Papers..... | .22½ | " | .25 |
| Print Manila..... | .65 | " | .70 |
| Container Manila... | .60 | " | .70 |
| Old Newspapers..... | .50 | " | .55 |
| Paper Wool Strings.. | .90 | " | 1.00 |
| Overissue News..... | 1.00 | " | 1.10 |
| Box Board Chips.... | .50 | " | .52½ |
| Corrugated Boxes... | .50 | " | — |
| Kraft corrugated boxes | 1.05 | " | — |
| New Kraft corrugated cuttings ..... | 1.40 | " | 1.50 |
| Screening Wrappers | .60 | " | .70 |

### Bagging

(f.o.b.Boston)

| | | | |
|---|---|---|---|
| Gunny Bagging— | | | |
| Foreign ..... | — | " | 2.85 |

## TORONTO

### Paper

### Bonds

| | | | |
|---|---|---|---|
| Direct mill shipment in two-ton lots. | | | |
| No. 1 White .....$36.50 | | @ | — |
| No. 1 Tints ..... | 37.50 | " | — |
| No. 2 White ..... | 26.50 | " | — |
| No. 2 Tints ..... | 27.50 | " | — |
| No. 2 Golden Rod.. | 28.50 | " | — |
| No. 3 White ..... | 22.00 | " | — |
| No. 4 White ..... | 15.50 | " | — |
| No. 4 Tints ..... | 16.50 | " | — |
| No. 4 Golden Rod.. | 17.50 | " | — |
| Direct mill shipment in three-ton lots. | | | |
| No. 5 White .....$10.40 | | @ | — |
| No. 5 Tints ..... | 11.40 | " | — |
| No. 5 Golden Rod.. | 12.40 | " | — |
| No. 6 White ..... | 9.40 | " | — |
| No. 6 Tints ..... | 9.90 | " | — |
| No. 6 Golden Rod.. | 11.40 | " | — |
| No. 7 White ..... | 8.40 | " | — |
| No. 7 Tints ..... | 8.90 | " | — |
| No. 7 Golden Rod.. | 10.40 | " | — |
| Book— | | | |
| No. 1 M. F. ..... | $7.75 | " | — |
| No. 2 M. F. ..... | 7.25 | " | — |
| No. 3 M. F. ..... | 6.60 | " | — |
| No. 1 S. C. ..... | 8.25 | " | — |
| No. 2 S. C. ..... | 7.75 | " | — |
| No. 3 S. C. ..... | 6.25 | " | — |

### Coated Book & Litho

Ton Lots (resale)

| | | | |
|---|---|---|---|
| No. 1 .....$12.15 | | @ | — |
| No. 2 ..... | 10.50 | " | — |
| No. 3 ..... | 9.45 | " | — |
| Coated tinted..... | 13.20 | " | — |
| Golden Rod..... | 14.80 | " | — |
| Wrapping—delivered— | | | |
| Rag Brown..... | 4.85 | " | 5.25 |
| White Wrap..... | 4.00 | " | — |
| "B" Manila..... | 4.90 | " | 6.15 |
| No. 1 Manila.... | $5.50 | @ | $6.90 |
| Fiber ..... | 5.50 | " | 6.90 |
| Kraft No. 2..... | 5.50 | " | 6.90 |

(f.o.b. Cars, Toronto)

| | | | |
|---|---|---|---|
| News per ton— | | | |
| Rolls (contract).. | 46.00 | " | — |
| Sheets ..... | 54.00 | " | — |

### Pulp

| | | | |
|---|---|---|---|
| Ground wood.....$36.50 | | @ | — |
| Unbleached sulphite. | 54.00 | " | — |
| Bleached sulphite... | 65.50 | " | — |
| Kraft ..... | 47.50 | " | — |
| Soda ..... | 58.00 | " | — |

### Old Waste Paper

(In carload lots, f.o.b. Toronto)

| | | | |
|---|---|---|---|
| Shavings— | | | |
| White Env. Cut... | 2.40 | @ | — |
| Soft White..... | 2.00 | " | 2.15 |
| White Blk. News.. | 1.35 | " | 1.50 |
| Book and Ledger— | | | |
| Flat Magazine and Book Stock (old) | .90 | " | 1.00 |
| Light and Crumpled Book Stock..... | .80 | " | .90 |
| Ledgers and Writings ..... | 1.15 | " | — |
| Manilas— | | | |
| New Manila Cut.. | 1.55 | " | 1.60 |
| Printed Manilas... | .70 | " | — |
| Kraft ..... | 1.15 | " | — |
| News and Scrap— | | | |
| Strictly Overissue | .75 | " | — |
| Strictly Folded .. | .70 | " | — |
| No. 1 Mixed Paper | .60 | " | — |

## CHICAGO

### Waste Paper

(f.o.b. Chicago)

| | | | |
|---|---|---|---|
| Shavings— | | | |
| No. 1 White Envelope cuttings.. | 2.40 | @ | — |
| No. 1 Hard White | 2.23 | " | — |
| No. 1 Soft White | 2.00 | " | — |
| Ledger and Writings | 1.20 | " | — |
| Solid Books..... | .95 | " | — |
| Blanks ..... | 1.70 | " | — |
| Krafts ..... | 1.00 | " | — |
| New Kraft Cuts..... | 1.60 | " | — |
| Overissue News..... | .80 | " | — |
| Old Newspapers— | | | |
| No. 1 Folded News | .73 | " | — |
| No. 1 Mixed Paper | .63 | " | — |
| Roofing Stocks— | | | |
| No. 1 ..... | 1.25 | @ | — |
| No. 2 ..... | 1.15 | " | — |

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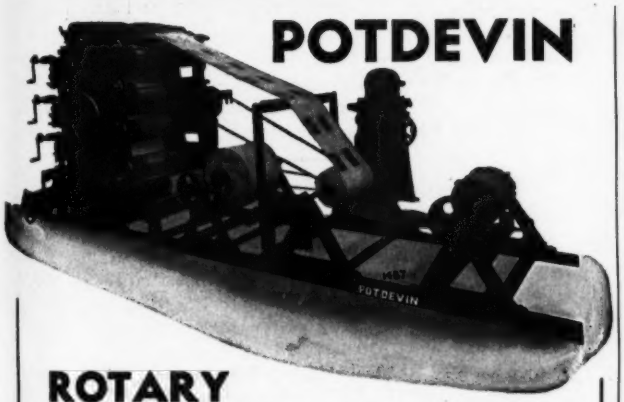
Bratislava, Czecho-Slovakia
SVANÖ AKTIEBOLAG
Svanö, Sweden

## POTDEVIN

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## To Hold Power Show December 2-7

The 14th National Exposition of Power & Mechanical Engineering has recently been announced for December 2 to 7, 1940, at Grand Central Palace, New York. Better known as the National Power Show, this biennial exposition brings together the product displays of over 300 leading manufacturers serving the power field, and is widely attended by power engineers, operating men and executives.

Analysis of the registration at the last exposition shows a total attendance of 42,611, with visitors from 1,228 cities and towns in 43 states of the U. S., and 61 cities and towns in 31 foreign countries. An informative folder has just been issued, giving a detailed analysis of registration by titles and by industries.

According to reports from International Exposition Company, who have managed this Exposition since its inception in 1922, 90 per cent of the exhibitors at the last Exposition in 1938 have already re-engaged their exhibit space. Indications point to the largest National Power Show since 1930.

## Roy K. Ferguson Heads Fund

Roy K. Ferguson, president of the St. Regis Paper Company, has accepted the chairmanship of the paper section for the 1940 campaign of the Greater New York Fund. W. J. Dixon, vice-president of St. Regis Paper Company, will be assistant to the chairman. The third annual drive of the Fund will open on April 1 with a town meeting in Madison Square Garden.

The fund appeal, conducted on behalf of the fund's 393 voluntary social welfare and health agencies, is directed exclusively to business firms and employee groups.

Now in its third year, the fund, through its affiliated agencies, annually helps serve 2,000,000 New Yorkers who need assistance. Among the several hundred agencies associated with the fund are the Federation for the Support of Jewish Philanthropic Societies, the Catholic Charities, the Federation of Protestant Welfare Agencies and the United Hospital Fund.

## National Wall Paper Month

National Wall Paper Month, March 20 to April 20, will be observed by 5,000 dealers, who handle "Unitized" wall paper, made by the United Wall Paper Factories. The company, which is conducting an extensive national advertising campaign, is making available a complete newspaper advertising service without cost, including some seventy-five mats for newspaper ads.

## Paper Mill at Lima Starts

The new paper mill operated by the Sociedad Agricola Paramonga started production late in 1939, according to a recent report from the office of the American Consul General at Lima. The mill is expected to produce all staple lines of paper, except newsprint, from bagasse, cotton waste, linters, stalks and similar vegetable fibers. Bagasse, waste paper, and gypsum will be employed in the manufacture of wallboard.

## Heads Northern New York Brotherhood

[FROM OUR REGULAR CORRESPONDENT]

HARRISVILLE, N. Y., March 25, 1940—The installation of officers for the Northern New York District Council of the International Brotherhood of Pulp, Sulphite and Paper Mill Workers was conducted here this week when Ralph G. O'Marrah, of Deferiet, became president. Other officers installed included Ernest Noakes, of Dexter, first vice president; Deforest Carter, of Harrisville, second vice president; Frank Callahan, of Deferiet, third vice president; Fred Cork, of Watertown, fourth vice president; John Hayes, of Deferiet, recording secretary; Clarence Faulds, of Watertown, financial secretary, and William Tyo, of Norfolk, treasurer. Approximately 60 delegates, representing 23 locals, attended the meeting which was addressed by Jacob Stephan, general representative of the International body, who spoke on the labor situation at the Carthage mill of the National Paper Products Company. Delegates from the various locals reported good operating conditions in their respective mills and closer cooperation between the locals was urged.

## Completes 50 Years with U. P.

James Perry Horton, an employee of the Lockport Mill, on March 19, 1940 completed fifty years of service with the United Paperboard Company at Lockport, N. Y. On that occasion W. S. Stuhr, president of the United Paperboard Company sent Mr. Horton the following letter:

"On March 19, 1940, you will have rounded out 50 full years of faithful service to the United Paperboard Company. This is the first time in the history of the company that that remarkable goal has been reached.

The board of directors and the officers of this company are well aware of your accomplishment, and they have asked me to select a suitable remembrance for you to keep as a souvenir of the occasion. In conformity with their request, I am sending you, through L. L. Hank, a watch on which is engraved 'In commemoration of 50 years of faithful service.' In my opinion nothing more could be added to your achievement.

"We all send along to you our congratulations and best wishes for many more happy years."

## Koven Wax Melter

A special wax melter, recently built by L. O. Koven & Bro., Inc., Jersey City, N. J. for a manufacturer of drinking cups, indicates a design which, with variations in dimensions, should be widely adaptable for melting wax, gummy or viscous substances and other materials which must not be subjected to possible contamination by the metal.

The inner melter tank is 10 feet long, 18 inches wide, 12 inches deep and is made of stainless steel to insure maintenance of water white color of the wax. A shell made of copper silicon bronze encases the tank and serves as a steam jacket for the tank. An outside housing made of galvanized steel and a layer of cork insulation cover the bronze steam jacket. The complete melter is of all welded construction.